U.S. Department of Transportation
Federal Aviation Administration

Memorandum

Subject: ACTION: NAS Training Plan

Date: FEB 8 19[illegible]

From: Director, Office of Training and Higher Education, AHT-1

Reply to Attn. of: Buschbaum: 366-7030

To: Distribution

This memo transmits the December 1989 update of the NAS Training Plan. This issue contains updated information and incorporates review comments from users at the FAA Academy, Headquarters, and Regional Offices. Our intent is to provide a thorough overview of all NAS Plan projects, standards, and orders and to project future FAA training developments.

Information which becomes available after the current publication date will be included in the June 1990 update.

Major sections from prior versions of the NAS Training Plan have been retained in the Appendices of this document.

We trust you will find this document a useful tool to aid you in planning training. Please forward all comments to Tom Buschbaum, AHT-400, at (FTS) 366-7030.

Joseph P. Kisicki

Attachment

National Airspace System Training Plan

December 1989

DEPARTMENT OF TRANSPORTATION

FEDERAL AVIATION ADMINISTRATION

Distribution: ZPT-407

Initiated By: AHT-400

FOREWORD

The National Airspace Training Plan issued June 1989 is superseded by this issue. This document has been updated significantly from the previous issue to include a comprehensive view of National Airspace System (NAS) Plan Training:

Chapter 1 - overview of new NAS Training Plan
Chapter 2 - FAA training philosophy and policy
Chapter 3 - review of current FAA Orders and Standards which impact training
Chapter 4 - view of FAA training management structure, including headquarters, the FAA Academy, regional office, and field facilities.
Chapter 5 - projected NAS Plan training schedules and descriptions of all NAS Plan projects requiring training.
Chapter 6 - status of Flight Plan for Training Initiatives
Chapter 7 - look to the future of FAA training through 1994

The goal of this plan is to provide a single document which includes information required for understanding, scheduling, and tracking training for all NAS Plan projects.

Your suggestions for improving this Training Plan are welcome. Please feel free to forward your comments directly to Tom Buschbaum, AHT-400. He can be reached at FTS 366-7030.

Joseph P. Kisicki
Director, Office of Training and
Higher Education, AHT-1

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1 PURPOSE OF THE NAS TRAINING PLAN

The Federal Aviation Administration (FAA) is in the process of procuring over 100 new subsystems to be integrated into the National Airspace System (NAS). These new subsystems are identified in the National Airspace System (NAS) Plan - Facilities, Equipment, Associated Development and Other Capital Needs. In this process, the FAA is faced with an enormous management challenge. To implement the NAS Plan, the FAA must ensure that all personnel receive training in time to test, install, operate, and maintain this new NAS equipment.

In this unprecedented step toward modernization, management of training resources -- people, time, and facilities -- must be well coordinated if the NAS Plan implementation is to be successful. The specific purpose of this document is to assist the FAA training community to meet this challenge.

Effective planning requires an understanding of both current and future training capabilities. As indicated in Figure 1-1, Overview of the NAS Training Plan, this document provides information on philosophy, policy, and training management. It also describes NAS Plan subsystems, the training initiatives in the Flight Plan for Training, procedures, orders, and standards, and Subsystem Training Plans (STPs).

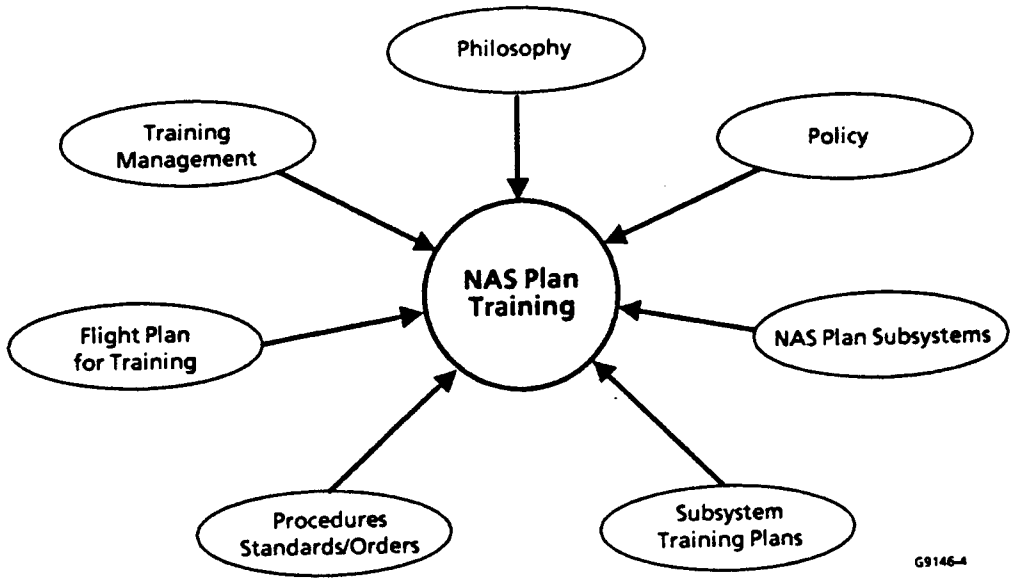

Figure 1-1. Overview of the NAS Training Plan.

As diagrammed in Figure 1-1, the NAS Training Plan examines a broad spectrum of training and related areas. In Chapter 2, Philosophy of FAA Training, a view of current policies and a look to future trends are provided. To implement the required training, the FAA relies on training orders and standards as the foundation of procedures and processes. Chapter 3, FAA Orders and Standards, describes all the documents available for this process and their interrelationships. The implementation of NAS training requires the skills and talents of a diverse population of FAA training personnel. In Chapter 4, Current FAA Training, organizations responsible for training in the FAA, including Headquarters, the FAA Academy (FAAAC), Regions, and the field, are described. To provide an overview of the subsystems NAS training supports, Chapter 5 includes a short description of all NAS Plan subsystems due to be delivered in the next 5 years. Critical milestones, numbers of personnel to be trained, and descriptions of automated tracking systems used to track this large training load are also provided. In Chapter 6, the training initiatives that make up the Flight Plan for Training are discussed. Short descriptions and a status of each initiative are included. Chapter 7, FAA Training Summary, locks at the future training organizations and the information systems that tie them together. This chapter explores the implementation of key NAS training initiatives which will be required for an effective program. Based on an analysis of these areas, Chapter 7 provides a description of how the training community should function 5 years into the future. This NAS training overview should provide the FAA training community with a basis for comprehensive planning.

Supplemental information is provided in the Appendices. Appendix A lists all abbreviations and acronyms used in this document. Appendix B contains an alphabetical index of all currently published Subsystem Training Plans. Currently 84 subsystems have published STPs. Appendix C, Guide to the Training Information Process, provides specific information on the suggested use of Subsystem Training Plans and the NAS Training Data Base (TDB) by different FAA organizations.

The NAS Training Plan is written by the System Engineering and Integration Contractor (SEIC) in cooperation with the FAA. Because of contractual agreements, this document concentrates on only the Air Traffic (AT) and Airway Facilities (AF) training for the NAS Plan. However, for completeness, information about the role and responsibilities of the Aviation Standards (AVS) Branch is included in Sections 2.8.4 and 4.2.7, as well as in the discussion on training initiatives in Chapter 6.

To ensure that all NAS training is implemented efficiently and effectively, the FAA has set two major goals. The first is to develop training plans that will provide efficient use of training resources. The second goal is to ensure that training procedures and management functions facilitate the incorporation of NAS

requirements into FAA policy. Attainment of these goals is both complementary and critical. This document has been revised to assist the FAA in attaining these goals.

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2 PHILOSOPHY OF TRAINING

2.1 OVERVIEW

Well trained personnel provide the foundation for any successful organization. Quality training programs, systematically developed and effectively delivered, result in confident, capable employees. For the FAA, better trained employees create a safer workplace and safer air travel nationwide.

The NAS Plan implements changes from analog hardware to software-intensive digital equipment. This has also resulted in related changes in the FAA's training system and its management. As shown in Figure 2-1, FAA NAS Modernization, training systems, resources, and people are evolving concurrently with the NAS. Chapter 2 addresses both planned and existing innovations.

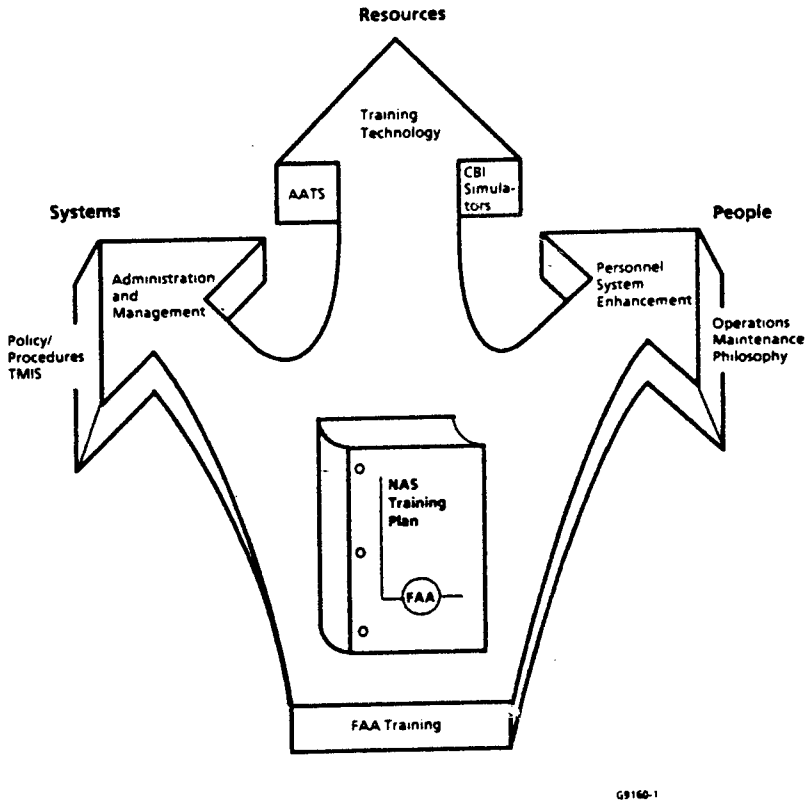

Figure 2-1, FAA NAS Modernization

Several of these innovations are discussed in Section 2.2. Section 2.3 covers the organizational changes which are now beginning. The revision of FAA Order 3000.6B, Training, is highlighted in Section 2.4, and other management trends are discussed in Section 2.5. The FAA Academy's training management system is described in Section 2.6. Training procurement and the Service organizations are covered in Sections 2.7 and 2.8, respectively.

This chapter attempts to look forward from today. The Orders and Standards listed in Chapter 3 will, in some cases, be altered. Chapter 4 covers the current (and possibly future) training complex. Chapter 5 delineates the NAS-specific transition requirements which have caused some of the trends and changes discussed in Section 2.2. The Flight Plan for Training, summarized in Chapter 6, focuses on projected initiatives of wider scope and greater range than the concepts explored in this chapter.

2.2 TRENDS IMPACTING TRAINING

Training is integral to the success of the FAA's modernization through the National Airspace System (NAS) Plan. The FAA workforce must be adequately prepared to operate and maintain the new equipment and systems in keeping with the demands of the new technologies presented in the NAS modernization. Training of the magnitude required for the NAS must be a highly systematic and integrated process. To approach NAS implementation systematically the FAA is carefully examining training planning and acquisition and is attempting to maximize the usefulness of supporting management and organizational functions. Management of training resources -- people, time and facilities -- must be carefully coordinated. In each of its evolutions, the NAS Training Plan seeks to provide for efficient use of training resources by identifying key trends and evolving policy within the FAA (see Figure 2-1, FAA NAS Modernization).

Many changes have been initiated and planned for FAA training since late 1987. These changes are the result of an intense FAA effort to examine its own training planning, management, and administration. Based on suggestions from FAA contractors and self-studies, the agency has recognized and accepted the changing state of training technology and is moving at several levels to expedite transition to a system of training development that will carry it into the next century.

Significant progress in facilitating fundamental change has been made in several areas within the training community. Major shifts are underway in training management, procurement, design, and development for Airway Facilities, Aviation Standards, and Air Traffic. Such shifts are apparent in organizational changes

designed to support: an increased commitment to centralized management of training; an increased commitment to Airway Facilities, Aviation Standards, and Air Traffic training users; a fresh look at the procurement process; the rewriting of FAA-STD-[illegible], Contract Training Programs; and a newly-focused attention on the revision of FAA Order 3000.6B, Training, to assure that FAA training processes and systems are state-of-the-art.

Complementing the thrust for change in FAA training is the establishment of the Training Technology Review Committee (TTRC) composed of senior FAA management. Membership includes AAC-900 (permanent chair), AHT-1, ASM-1, AAT-10, APR-100, AAP-200 and AAC-500. Members review and make decisions concerning training technology plans and policy to support the agency's training and education needs.

The TTRC also includes the following associate members: AHT-200, AHT-400, AHT-500, AHT-30, AAP-240, ASM-200, AMS-320, AAC-70 and AAT-30.

The major issue currently under review by the TTRC is Computer-Based Instruction (CBI).

The Office of Training and Higher Education is the focal point for implementing the initiatives described in the Flight Plan for Training. The goals are to provide the FAA with adequate staffing and funding for FAA training and a management system responsive to training needs. Chapter 6 summarizes all of the Flight Plan for Training initiatives.

The cornerstone of this total approach to the improvement of FAA training is the new FAA Education and Training Model (Figure 2-2, FAA Education/Training Model).

NATIONAL TRAINING MANAGEMENT

To support and facilitate the change process, FAA's senior management performed an internal reassessment of the role of the Office of Training and Higher Education (AHT). The Office of Training and Higher Education (formerly APT-300) was elevated from a Division to an Office. AHT now has a greater voice on national training issues. One result of the reassessment is the realignment of AHT to maximize its utility to the field and to the FAA Academy as shown in Figure 2-3, Training and Higher Education Organization. This reorganization allows for direct communications with Airway Facilities and Air Traffic. Each NAS project also has a dedicated analyst for AT issues and an analyst for AF issues.

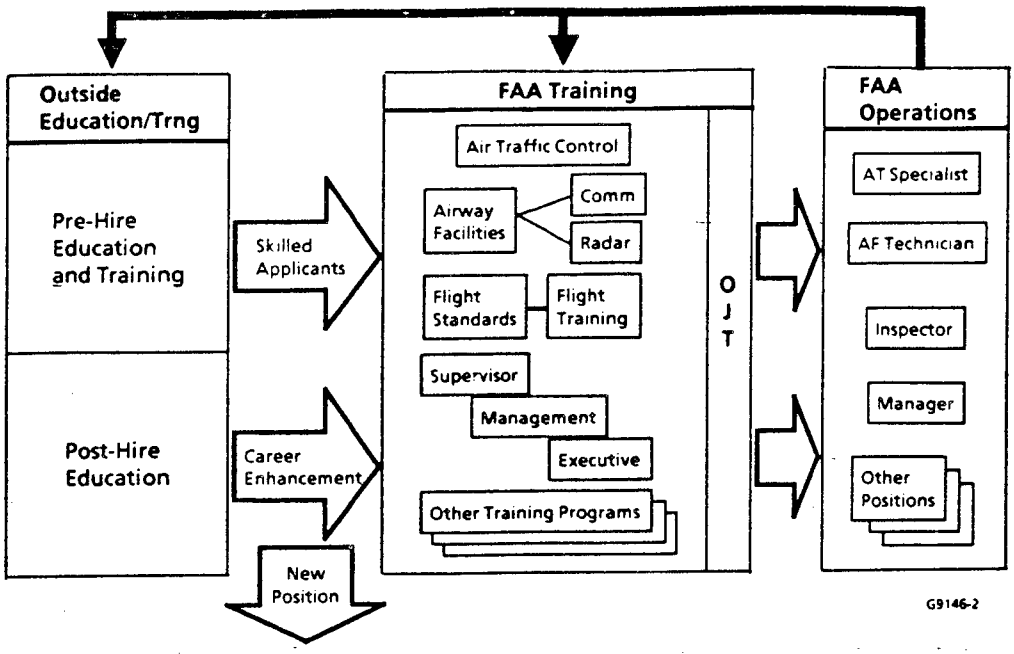

Figure 2-2, FAA Education/Training Model

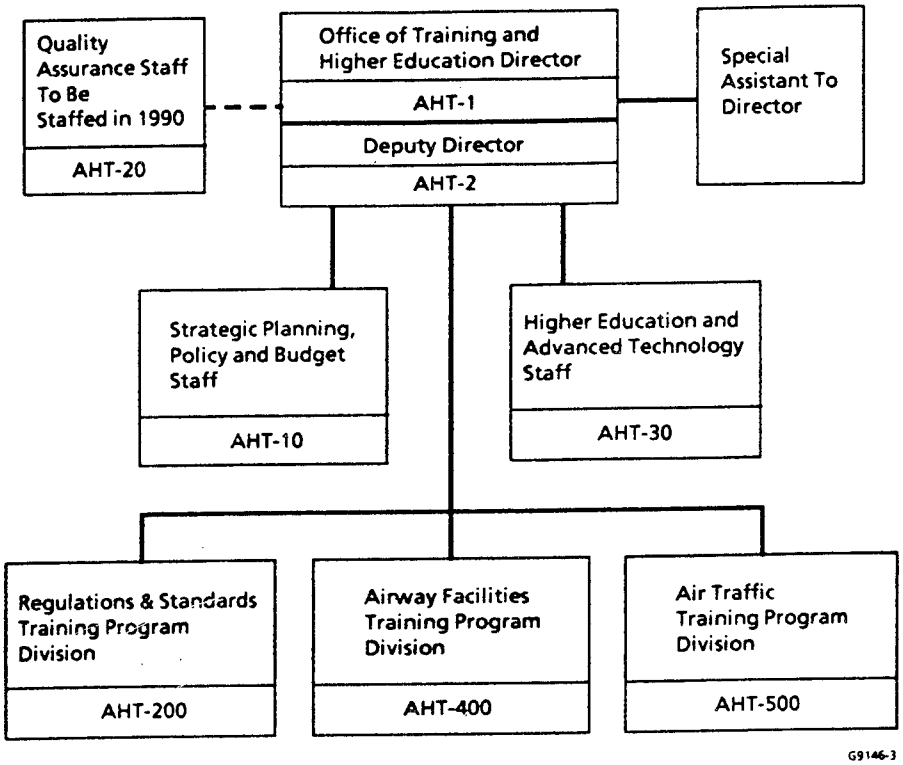

Figure 2-3, Training and Higher Education Organization

AHT also created separate organizations to address Strategic Planning, Policy, and Budget (AHT-10); Higher Education and Advanced Technology (AHT-30); and Regulations and Standards (AHT-200). This new organizational structure allows AHT to pursue training in terms of day-to-day issues and services and creates the necessary linkages with other FAA planning and management functions. It also encourages exploration of new developments in training technology through links to other education and training institutions and programs.

AHT is responsible for establishing and maintaining a technical training program that is responsive to the FAA's operational needs. Along with developing technical training policy, this office approves the training curricula, monitors the overall analysis, design, development, delivery, and evaluation of technical training.

2.4 TRAINING POLICY AND PROCEDURE

FAA Order 3000.6B, Training, is undergoing its first major revision since 1974. This comprehensive reevaluation and revision effort is drawing on the skills of a team of twenty-six FAA and contractor personnel. This FAA Order 3000.6B Revision Workgroup includes representatives from the regions, the FAA Academy, and FAA Headquarters who are working to create a new FAA training policy. The policy, which is based on institutional goals and philosophies, encompasses successful practices of the past and merges them with progressive concepts and technologies. When it is complete, the revised Order will be the guiding policy for all FAA training, including AF and AT technical training, training for Aviation Standards (AVS), and training for the Center for Management Development (CMD).

The updated Order addresses the FAA training system, which consists of planning, training development, implementation, and evaluation. The training philosophy in this Order emphasizes systematic development of the most efficient and effective training program to support operational requirements. It prescribes policy, assigns responsibilities, and provides guidance for planning and establishes training programs, including:

- Yearly activities for long-range planning,
- Prerequisites for analyzing job requirements,
- Application of systematic development procedures and documentation, and
- Training program, course, and participant evaluation.

It also defines the roles and responsibilities of FAA organizations, -- which within law, regulation, and delegation -- are responsible for agency training.

Because the agency used a variety of training terms in the past (e.g., proficiency training, refresher training, ground-up training, and attrition training), clarifying and redefining FAA training terminology was a primary goal of the Revision Workgroup. The draft version of the updated Order contains revised training terminology and related descriptions that constitute a "common language" FAA personnel can use to characterize necessary training. These training terms and descriptions are explained further in Section 2.4.1.

2.4.1 Training Terminology

The FAA uses the following terms to refer to training for a variety of purposes, including procurement, budgeting, prioritization, and application of specific rules when discrimination between training programs is needed. The terms are grouped below according to the context in which they normally occur within the FAA:

- Terms for the Source of the Training,
- Terms for the Nature of the Learning,
- Terms for the Organizational Level of the Program,
- Terms for the Broad Content of the Training, and
- Terms for the Location of the Training.

See Sections 2.4.1.1 through 2.4.1.5 for definitions of each term within these groups.

2.4.1.1 Terms for the Source of the Training

1) In-agency Training: Training conducted and/or administered by the FAA Academy, Center for Management Development, region, center and headquarters training staffs, and contractors.

2) Out-of-agency Training: Training developed and delivered by non-FAA sources, such as General Services Adminstration (GSA), Office of Personnel Management (OPM),

Department of Defense (DoD), or by non-Government sources, such as air carriers, equipment manufacturers, colleges, and universities.

2.4.1.2 Terms for the Nature of the Learning

1) Initial Training: Training to support the deployment of new systems, new equipment, new procedures, new job requirements or new hire training.

2) Recurrent Training: Established, ongoing training required to gain or maintain knowledge, skills, and proficiency in job functions. Such training can be provided to newly assigned personnel or to incumbent personnel to improve or enhance knowledge, skills, and abilities. Recurrent training is also referred to as refresher or proficiency training.

2.4.1.3 Terms for the Organizational Level of the Program

1) National: A training program or course offered to new hires or incumbents of a specific position or job category on a nationwide basis. Administered nationally.

2) Regional: Training applicable to a specific region. Administered regionally.

3) Local: Training applicable to a single location, administered by the local manager with the assistance of the regional training office, as needed.

2.4.1.4 Terms for the Broad Content of the Training

1) Technical Training: Training related to the job requirements of a particular occupational group.

2) General/Administrative Training: Training related to the job requirements of FAA clerical, administrative, and support personnel and for non-technical training for technical personnel.

3) Management and Supervisory Training: Training provided for those persons who are responsible for management and supervision of FAA employees.

4) Executive Development: Specialized and advanced managerial training and development activities for persons identified for executive development.

2.4.1.5 Terms for the Location of the Training

1) Resident Training: Training in which students reside at or near the location of the training and which may require per diem and travel funds. Resident training is conducted and/or administered by the FAA Academy, Center for Management Development, FAA Technical Center (FAATC), or region, center, or headquarters training staffs.

2) Off-site Training: Training provided at any place other than the participant's principal place of employment.

3) Site-specific Training: Training which is unique to a specific site(s), through it may not necessarily be conducted at that site.

4) At-distance Programs: Training programs which are primarily non-resident, self-paced, individualized instruction.

5) Government Out-of-Agency Training: Any training which is provided by Federal Government Agencies other than the FAA.

6) Non-Government Training: Any training conducted by a non-Federally employed person or persons, or under the sponsorship or auspices of a non-Federal organization, including state and local government agencies or public or private companies, associations, or foundations.

7) At-Distance Programs: Programs which are primarily non-resident, self-paced, individualized instruction. Employees may participate in these programs voluntarily or they may be required to satisfy a prerequisite or to improve job performance. Some methods

of delivery are: correspondence study, Computer Based Instruction (CBI), Computer Assisted Instruction (CAI), briefing guides, videotaped instruction, and pre-course study packages. These programs can be both required or voluntary instruction.

2.4.2 Other Revision Elements - FAA Order 3000.6B

The FAA Order 3000.6B Revision Workgroup will continue its efforts to carefully restructure the governing policy for FAA Training (see Section 3.2.1). Completion of this revision is expected in 1990. The following changes will also be reflected in the revised Order:

1) Application of the Instructional Systems Development (ISD) process is described in the revision of FAA-STD-028. Policy supporting that revision will be a large part of the restructuring of FAA Order 3000.6B

2) Separate instructional design and development guidelines will be included for technical training and for management, supervisory, and general training. Instructional Systems Development is the standard for technical training. Instructional Design, using principles of adult learning, will become a design and development alternative for management, supervisory and general training.

3) Administrative Policy will be revised to streamline the training management process. Many of the elements of FAA-STD-028 are outdated or cumbersome. Administrative functions, (e.g., the procurement process) will be revised, along with restructured instructional development activities. Contract training will require contractors to identify instructional alternatives and delivery systems in their suggested course designs prior to courseware development. Administrative policy will allow for review and approval of such alternatives before development can begin.

The first step in systematically overhauling the FAA Training process is the revision of FAA Orders and Standards governing training. The revised guidelines will provide the foundation for building a comprehensive and fresh approach to training planning,

design, development, delivery, and management. The result will be a new training system capable of meeting the needs of the FAA in the foreseeable future. Maintenance policy and philosophy will be documented in the Maintenance and Operations Plan for the Year 2000, which is described in Section 2.8.2. When available, the Plan will be used to determine appropriate maintenance training levels. The FAA will become a model of state-of-the-art training and will employ the most progressive and innovative training systems and concepts available.

2.5 MANAGEMENT INFORMATION SYSTEMS ACTIVITIES

The Office of Training and Higher Education (AHT-1) is changing the long-range planning and requirements definition process now in use. The current process includes a five-year budget planning process, which is prepared by using data provided by the services. In addition the Strategic Planning, Policy and Budget Staff (AHT-10) prepares the budget request, which must be submitted two years prior to budget execution.

The year after the budget request is prepared, the annual "Call for Training" process is started. The FAA uses this process to define the training requirements for each budget execution year. These requirements are constrained by the budget submitted during the prior fiscal year.

These two independent processes are not currently synchronized. As a result, training requirements are determined by the budget instead of by requirements, leaving some requirements unfunded. The regions and services use a variety of automated training management systems to assist them in identifying their training requirements. These training management systems consist of many data bases developed to do specific tasks. They include Computer Aided Human Resource Planning System (CHURPS), the pipeline tool, the NAS Training Data Base, Trimate, and the Long Range Planning Tool. Because these data bases were developed independently, they are not always compatible.

AHT plans to develop a centralized training management system that will link appropriate training information currently available. This will provide local input into training planning, while maintaining centralized control of the process.

With the new system in place, AHT will institute the seven-year training management cycle shown in Figure 2-4, Training Management Cycle. The training management cycle (Figure 2-4, Part A) includes two plans, the long range plan (Figure 2-4, Part B) and the implementation plan (Figure 2-4, Part C). These two plans will combine the processes currently in use into one synchronized process which provides requirements identification prior to the budget process. Long-range planning begins five years prior to

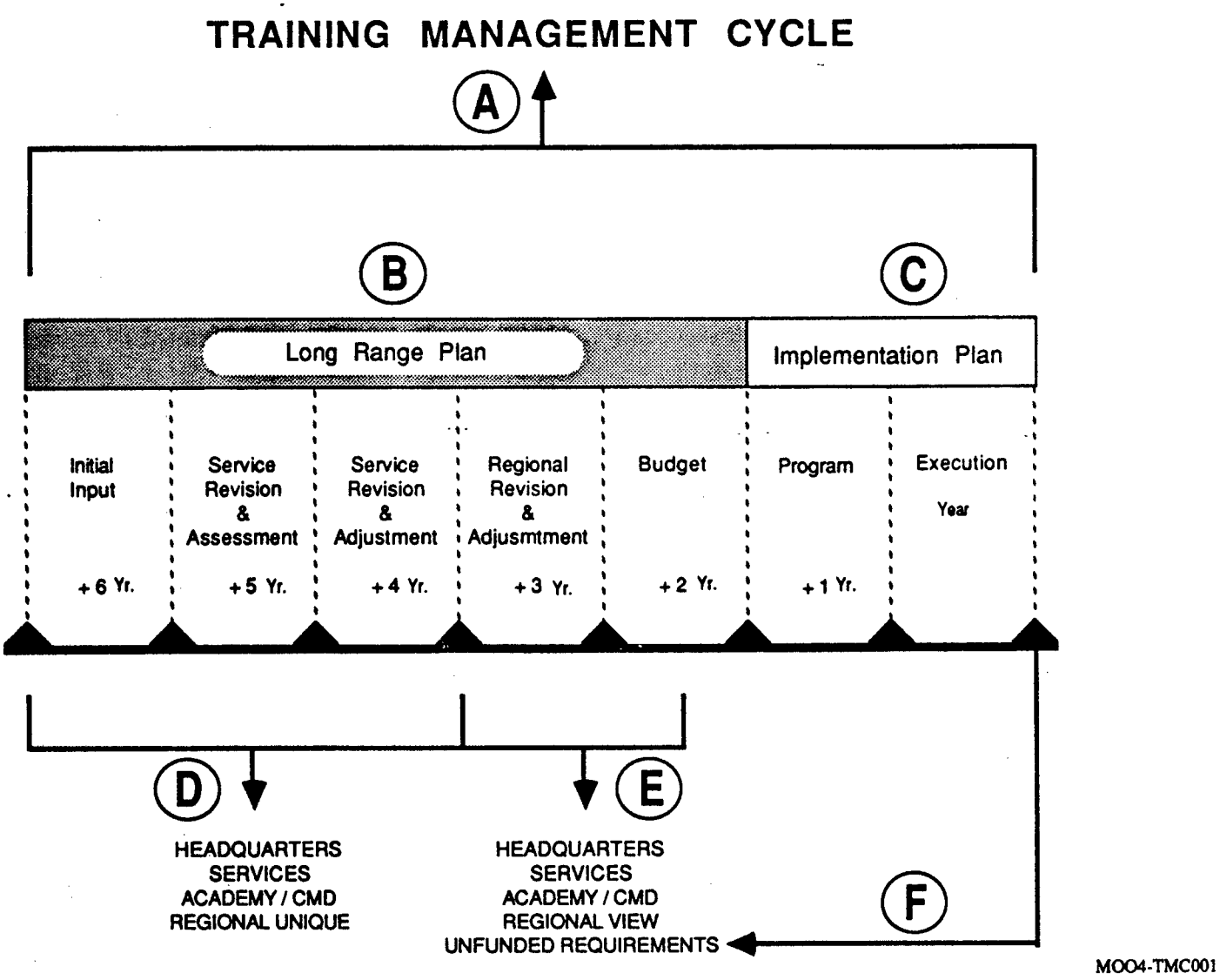

Figure 2-4, Training Management Cycle

the budget process and ends when the budget is submitted. The implementation plan covers the year prior to execution as well as the execution year.

The long-range plan is an iterative process that consists of two phases. Phase 1, which spans the first three years of the long-range plan (Figure 2-4, Part D), starts with the initial input for national programs by the services. This input will be for courses and classes to be delivered and courses to be developed. Each year, the services will assess and revise the data, using information available in the training management system. The FAA Academy and CMD will also assess and revise the plan in terms of their capability. Regions will input and revise only region-unique requirements.

During Phase 2 (Figure 2-4, Part E), the regions will revise and adjust the plan prior to budget submission. In addition, unfunded requirements from the previous year are added to the requirements. The final budget request is prepared during the final year of long-range planning.

The implementation plan (Figure 2-4, Part C) is a two-year plan. In the first year, resources are programmed against the requirements, with consideration of the approved budget. Unfunded requirements will be fed back into the current long-range plan (Figure 2-4, Part F).

Although Figure 2-4 illustrates the various processes that occur during each year of the training management cycle, the cycle is not linear. Figure 2-5 , Training Management Cycle Overlay, illustrates the parallel nature of the process. During any given point in time, each phase occurs for some training program. This overlay shows how execution, program implementation, regional and service revisions, and initial input occur simultaneously but for different programs. The current year marker illustrates the processes occurring in the current year. This complex process will take careful planning and coordination.

2.6 THE FAA ACADEMY

The FAA Academy continues to contribute substantially to the training process. In the past year, more emphasis has been placed on improving communications among training community members. More Technical Interchange Meetings (TIMs) have been conducted with contractors and Headquarters project personnel. These meetings bring together the FAA Academy training managers, education specialists, contractor personnel, and Headquarters project analysts to examine the progress on specific NAS Plan projects. These groups work together to assure that schedules are met, that training deliverables comply with FAA Academy standards,

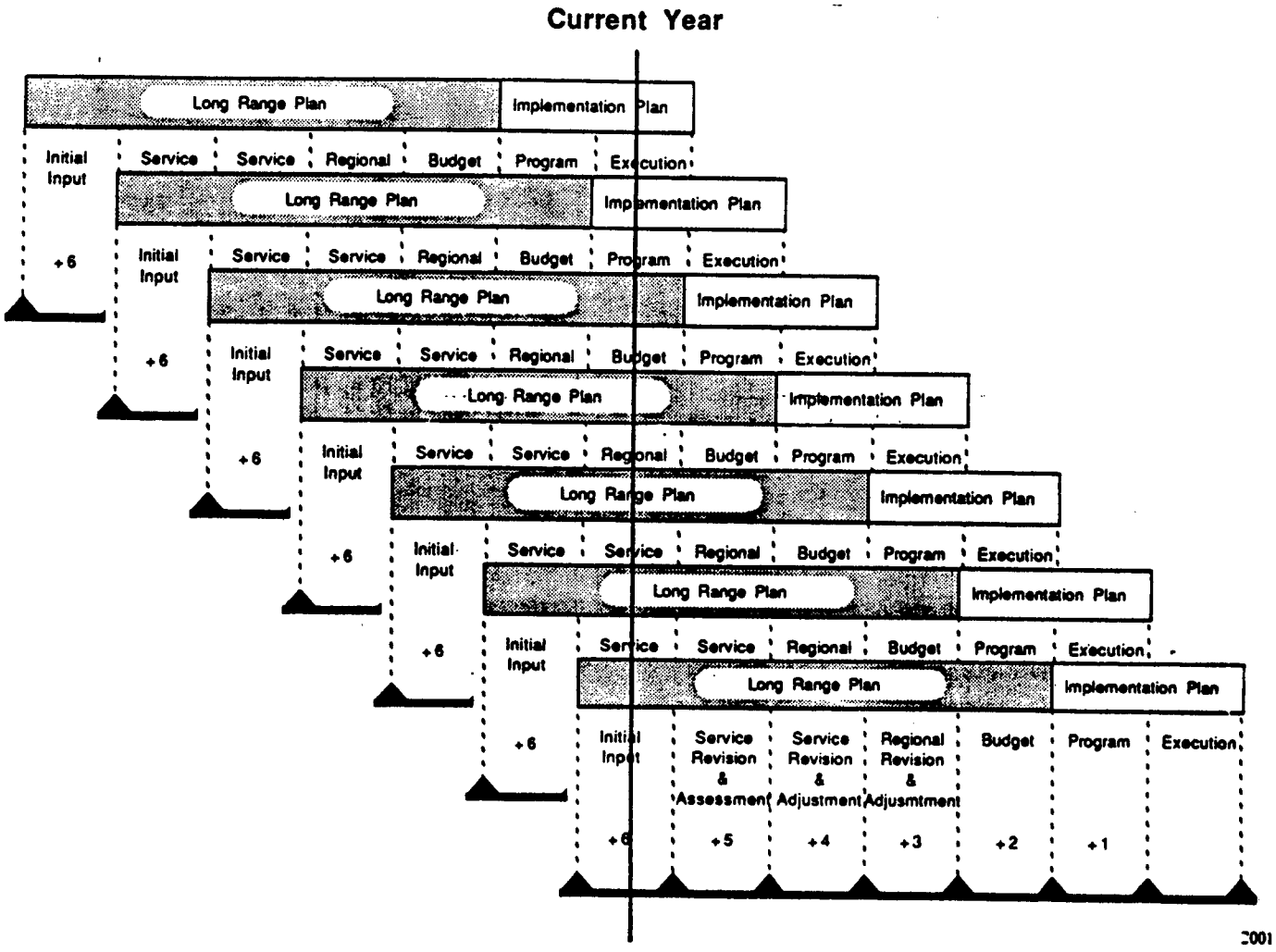

Figure 2-5, Training Management Cycle Overlay

and to generally assure that contractors are keeping pace with FAA expectations for quality training.

Two important products will be forthcoming for use by the FAA Academy: the NAS Training Data Base Academy Interface, and the Automated Training Management System (ATMS) - FAA Academy. The NAS Training Data Base Academy Interface will allow FAA Academy AF and AT training personnel access to scheduling data provided to the Systems Engineering and Integration Contractor (SEIC) by the FAA Regional Offices. Schedules developed by the SEIC, based on information provided by Headquarters staff, are currently reviewed by the regions. Based on feedback from the regions, resulting schedules will be reviewed and validated by the FAA Academy. This tool will allow the FAA Academy to effectively plan for its use of classrooms, instructors, and other resources.

The Automated Training Management System (ATMS) - FAA Academy being developed by the FAA Academy will be a site-specific data network between the Air Traffic Branch and other users. Information will be readily retrievable on the status of individual projects, including points of contact, training development details, and training schedule data. Decentralized organizations like the FAA benefit from data networks by making up-to-date information available to all decision makers.

Finally, the FAA intends to establish the FAA Academy as the worldwide Center for Excellence in aviation training. The FAA Academy will have the best instructors and administrators, as well as the latest technology in aviation training, including interactive training technology and high fidelity simulators. The FAA Academy will also employ the latest innovations in training development, including automated design systems, as well as the very best instructional delivery systems.

2.7 PROCUREMENT

Procurement of FAA training will undergo change with the approval of FAA-STD-028A, Contract Training Program. This standard establishes the requirements for developing, conducting, and validating contract training programs (see Section 3.3.1). FAA-STD-028 has gone through an extensive revision, resulting in FAA-STD-028A, which is currently in internal review. The proposed new standard restructures the way contractors will be required to handle training design, development, and delivery. The new standard still uses Instructional Systems Development as the structure for training. Changes to the standard are largely in the processes required of contractors. Traceability throughout the process, instructional integrity, and clear direction to contractors are key elements in the revised standard.

The procurement process will be altered somewhat to allow contractors flexibility in generating instructional alternatives. The identification of alternatives, and the selection by the FAA of those most appropriate, should result in less conflict with contractors over their submissions.

The FAA Academy is also examining, under the auspices of the Flight Plan for Training, the means for streamlining and simplifying the procurement process. The project seeks to eliminate unnecessary steps in the procurement process and to make the process more responsive to FAA needs.

2.8 THE SERVICE ORGANIZATIONS

The Air Traffic and Airway Facilities service organizations bear the impact of the NAS Plan transition. The Aviation Standards, Flight Standards, and Aircraft Certification disciplines of the Regulatory Standards and Compliance executive directorship are involved with flight inspection of the NAS. The services continue to be responsible for: identification of training requirements, establishment of priorities for training, evaluation of training effectiveness, and management of field training. Successful performance of these responsibilities requires that the service organizations clearly identify their needs in terms of training content and timing and communicate those needs to both the Office of Training and Higher Education (AHT-1) and the FAA Academy. The service organizations have the primary responsibility for managing field training, On-the-Job Training (OJT), and field-based simulation training. Management responsibilities in this area include providing highly-qualified OJT instructors and providing a fully supportive environment for training.

Training is a continuing effort, which directly contributes to excellence in the operational environment and enhances employee development. The services are committed to developing and refining human resources policies, programs, and activities that continually enhance human productivity. The positive development of employee knowledge and skills is a responsibility shared by both management and the individual employee. The AF, AT, and AVS services are responsible for assisting employees to develop to their fullest potential by providing opportunities that maximize professional growth.

2.8.1 Air Traffic Training

Air Traffic employees need a comprehensive base of knowledge and skills to assist management in making critical decisions. Individual employees are, therefore, encouraged to aggressively pursue increased skills and knowledge.

Technical training is one of the strongest assets of the Air Traffic Service. While basic technical training is taught at the FAA Academy, most occupational training occurs at field facilities and culminate in certification as an air traffic controller. Facility training in locally adapted national procedures is primarily accomplished via lecture, simulation, laboratory, and On-the-Job Training (OJT) under the direction of qualified instructors. Operational Position Standards (OPS) provide the criteria for training the developmental controller. The OPS Order 7220.2 was effective on June 23, 1988.

On-the-Job Training has been carefully reviewed to assess ways in which it might be improved. The new OJT program will include additional procedures for OJT instruction, evaluation, and position certification of Air Traffic Controllers. The new Order (effective August 8, 1988), separates the instruction and evaluation functions. A new OJT instructor training course has been developed and will teach Air Traffic Controllers how to conduct On-the-Job Training more effectively. A separate course for OJT evaluators became available in June, 1989.

The Air Traffic Service is also developing the Technical Performance Review (TPR), which is a new approach to performance evaluation. It is designed to streamline and enhance evaluation of operational performance by developing a new process to standardize evaluation of Air Traffic Controllers. The field validation has been completed and initial feedback is very favorable. We are revising the TPR order to incorporate recommended improvements from the field test. The draft Order was distributed to the field for final comment during the third quarter of FY 89. The target date for distribution is the second quarter of FY 90.

Another long-term effort is improvement in the management of training. We are developing an Automated Training Management System which will be on-line in our Air Route Traffic Control Centers (ARTCCs) and will provide us with up-to-date data on the progress of developmental controllers as they progress through the system. This system, which is being developed by personnel at the Minneapolis ARTCC, will allow us to plan more effectively for our staffing needs and to monitor the effectiveness of the management for facility training programs. Operational testing of the software has been completed by the Minneapolis ARTCC. Computer systems were delivered to the ARTCC training departments in FY 89. However, we are experiencing some delays in linking the systems into a network.

The requirement to train all personnel on systems being integrated by the NAS Modernization Plan mandates implementation of innovative, cost-efficient training methods, which do not adversely impact daily operations. Accordingly, the cadre concept of training a team in each region who will then train the

remaining regional Air Traffic specialists will be implemented. The cadre concept will standardize training to all employees before new equipment and procedures are integrated, while maximizing cost-benefit ratios.

Operational demands and economic constraints preclude FAA Academy resident training for all except this cadre of instructionally qualified Air Traffic personnel. Currently, the FAA is circulating an Order for Air Traffic Cadre Training.

Several recent studies have confirmed the need to increase the degree of simulation devices used in our overall training methodology. Where safety depends on the precise application of knowledge and skills, as it is in the Air Traffic control environment, it is generally accepted that repetitive training on simulation devices that replicate the operational equipment produces the most benefit. To the extent that practical constraints can be overcome, simulation training is the methodology of choice in the technical training of Air Traffic personnel. The effectiveness of the training, not the cost-benefit, shall be the prime determining factor in training media selection. The burden of training will be off-loaded from the operational environment to a high fidelity simulated environment, with certification still taking place in the operational environment. The training goal is to constructively challenge the student to achieve knowledge and skill mastery within a more efficient and effective training program.

2.8.2 Airway Facilities Training

Since the inception of the FAA, Airway Facilities has had a technical training program designed to ensure that the technical workforce was qualified to minimize disruptions of service to users of FAA equipment. To assure this, AF training has been designed to train personnel to meet qualifications that include knowledge and skill down to the component level. Such training has decreased the number of outages by implementing an intensive preventive maintenance program. This labor-intensive system will be unnecessary with the improved reliability of solid-state equipment now being procured.

Increasing air activity and user demand have resulted in the NAS Plan, which modernizes FAA equipment. As a result, over the next several years, the FAA will continue to receive new equipment and systems that reflect the latest technological advances. These rapid technical changes, coupled with the need to provide added public service at a reduced cost, have necessitated a review and reassessment of the training required to meet the new operational concepts and maintenance inherent in the NAS.

Airway Facilities must ensure that qualified technicians are available to assume maintenance responsibility for the new equipment as it is delivered and that technicians can also maintain the old facilities as long as they remain in the inventory. To meet the challenge of new technological advancements, training must ensure proficiency for the journeyman and must provide new hires with appropriate training to meet the same high standards as the experienced technician. Currently, AF training planners are reevaluating the AF career progression chart.

The Maintenance and Operations Plan for the Year 2000 will provide a new basis for AF training development. This plan will present detailed operating and maintenance concepts associated with the deployment of NAS systems. Training for the AF workforce must undergo significant change. Operation and maintenance concepts will require a new support system. Remote Maintenance Monitoring System (RMMS), centralized monitoring and control, and Maintenance Control Centers (MCCs) are among the concepts underlying planning for the Maintenance Automation Program. Under the new support systems, Airway Facilities Sectors will remain the principal field element in the maintenance program. The sector office will provide administrative and technical support functions. It is also the focal point for maintenance functions and may be the location for the RMMS computers. All facility performance information will be automatically routed to a Maintenance Control Center. The MCC provides 24-hour monitoring and control for a specified group of facilities using RMMS. MCCs will be located at all ARTCC or Area Control Facility (ACF), Level V, and selected Level IV locations.

The FAA's AF training programs will be evolutionary in nature. After new systems like RMMS come on-line, they will undergo enhancement to tie in all the new maintenance programs. A building-block training concept employing interactive video, computer-assisted instruction, modular-course construction, and other innovative instructional methods will be used to prepare AF technicians and support personnel. Training will center on the needs of the learners, based on NAS maintenance and operational demands.

AF has a proposed New Hire Training Program to assure that new employees are technically capable of assuming responsibility for systems acquired under the NAS Plan. See Figure 2-6, New-Hire Training Progression for GS Series 802/850/856/855 and Figure 2-7, New-Hire Training Progression for the WG Maintenance Mechanic. New hires will receive professional preparation that is consistent with NAS evolution. As the NAS becomes more technically complex, so will the demands on the AF workforce. To meet this demand, new hires will go through the rigorous revised initial training depicted in Figures 2-6 and 2-7 will be trained in the maintenance and operation of new NAS technologies as they emerge.

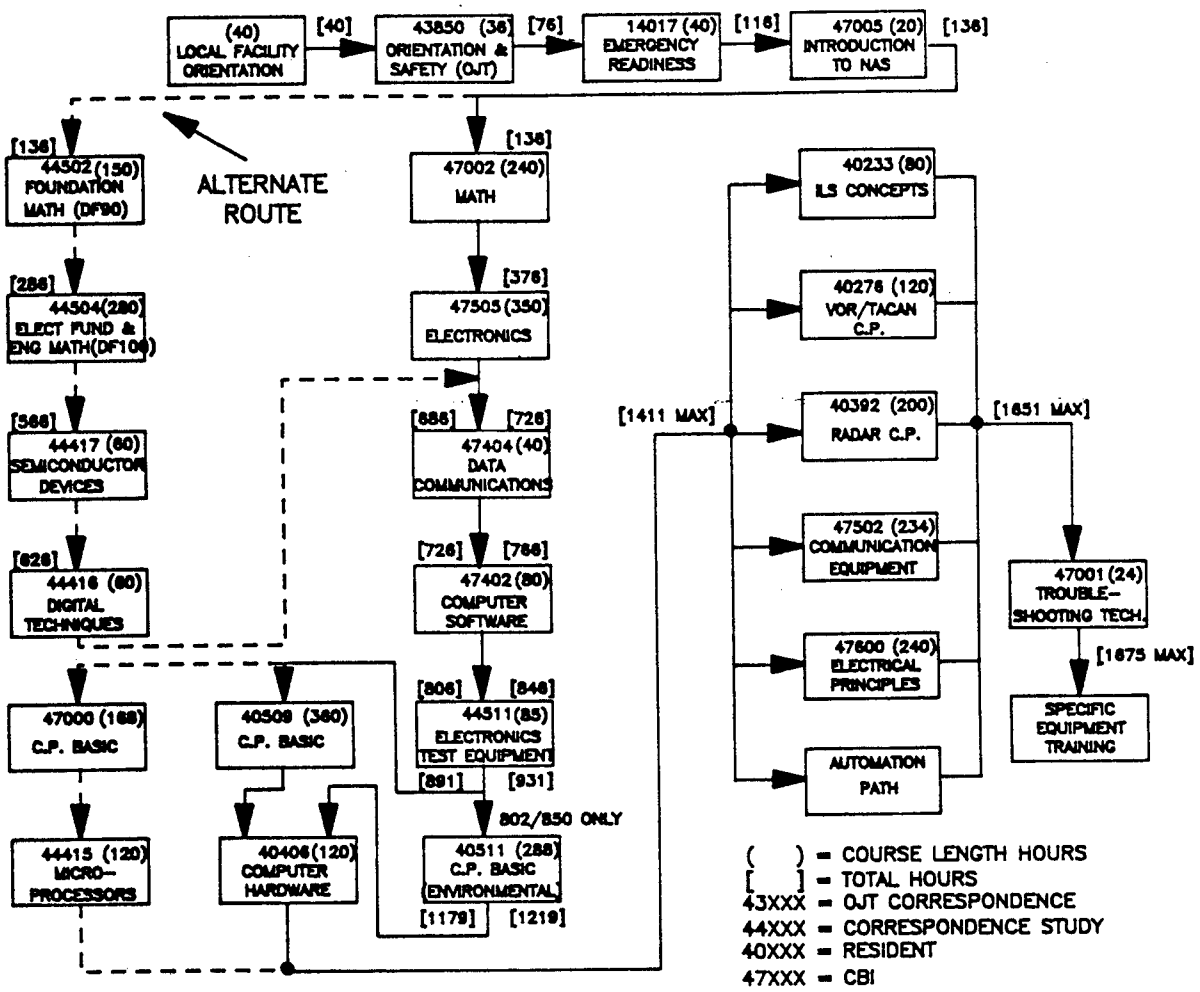

Figure 2-6, New-Hire Training Progression for GS Series 802/850/856/855

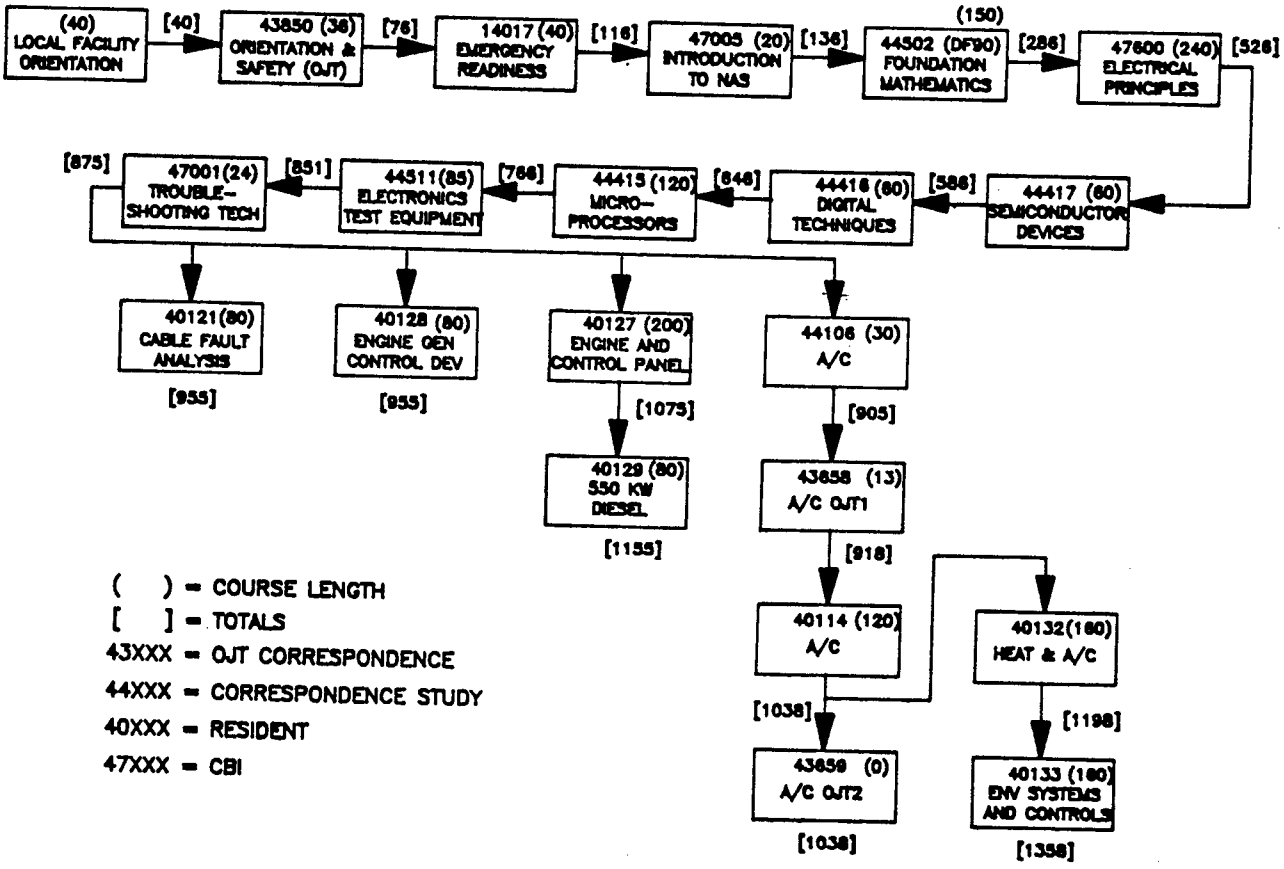

Figure 2-7, New-Hire Training Progression for the WG Maintenance Mechanic

2.8.3 Depot Training

The FAA maintenance concept requires that FAA Depot maintenance personnel have a very detailed knowledge of the equipment. They must have an operating knowledge, as well as detailed circuit knowledge, of the system to perform system checks when line replaceable units (LRUs) are placed into a test bed or repair station for verification and/or troubleshooting. On most NAS equipment, FAA Depot personnel will be the only source for providing detailed component level replacement and/or modifications. If the equipment is to have contractor repair service for its life cycle, the FAA Depot has no requirement for depot-level training. The depot-level training will be a part of the equipment procurement contract. The Systems Maintenance Service has determined that training will be procured to the component level if required to support FAA Depot-level training.

2.8.4 Aviation Standards Training

The demands on Aviation Standards personnel resulting from operation of the NAS will affect the flight inspection technicians and pilots primarily. However, the installation of airborne test equipment for the NAS will affect the aircraft certification activity.

Aviation Standards must ensure that qualified inspectors and pilots are available to assume flight inspection responsibility, using the new equipment as it is installed, and that technicians can also monitor the old equipment as long as it remains operational.

Aircraft certification engineers, manufacturing inspectors, and airworthiness inspectors must be trained to meet the challenge of new technological advancements. Journeymen must remain proficient, and new hires must be trained to meet high standards of technical capability.

The Aviation Standards training programs will consist of both resident and out-of-agency courses in the various technologies inherent to the NAS.

2.9 TECHNOLOGICAL TRENDS IN FAA TRAINING

The FAA is moving rapidly towards highly modernized instruction. The use of new technologies will require much instructional expertise, but we will likely see a de-emphasis on traditional classroom activities in favor of machine-mediated instruction.

2.9.1 Classrooms of the Future

The "Classroom of the Future" is being developed at the FAA Academy. The new "classroom" will be a multiple-use facility equipped with the Interactive Instructional Delivery System (IADS). The room will be capable of employing lecture/lab instruction and traditional media, but IADS will be a self-contained authoring system and an instructional delivery and management system. Using a workstation, instructors may select instruction and classroom management files from many programs resident in the system. Retrievable files may provide computerized lessons, interactive video, digitized video, radar scenarios, tower scenarios, and voice recognition. Other files will be instructional management and automated testing programs which will allow the classroom to be used as a testing center. Instructors will be able to construct lessons at will, based on Course Design Guide outcomes by creating and using programmed lesson plans. The "Classroom of the Future" will initially be part of the Tower Simulator project. Two initial classrooms will be constructed, with more to follow after evaluation of the prototype is complete.

2.9.2 Simulators

An emphasis on the acquisition of full-task and part-task simulators continues. The FAA recognizes the need for such technology to provide the best possible training to its workforce with minimal disruption of operations. Maximum operational training requires "real-time" operations. However, real-time training can be dangerous and does not allow trainees to practice solving complex problems on any consistent basis. Simulators allow all trainees to experience "real" situations in an artificial environment. Several simulator projects are in various stages of development including the Tower Simulator; a three-dimensional graphic simulator; the Instrument Flight Rules (IFR) Tower Lab - simulations for the Low Level Wind Shear Alert System (LLWAS), Airport Surface Detection Equipment Radar (ASDE-3), and Digital Bright Radar Indicator Tower Equipment (DBRITE); and the Advanced Tower Simulator -- an Advanced Automation Sytem (AAS)-capable, 360-degree simulator for facilities up to Level V.

2.10 SUMMARY TRAINING PHILOSOPHY

In the last ten years, remarkable strides have been made in the advancement of training technologies. Computers, interactive video, and sophisticated production systems have increased the quality training options available to developers and users. With advances in computer technology, part-task and full-task training systems are capable of a significantly higher degree of simulation than they were only a few years ago. The FAA

recognizes its opportunity to exploit these technologies. Training and management systems are being modified from the top down, to assure that such technology is used extensively in future FAA Training. The revision of training policy and procedures (FAA Order 3000.6B and FAA-STD-028) includes recognition of systems which must be in place in both the procurement process and in the instructional development process to accommodate the acquisition of alternative instructional methods.

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3 FAA ORDERS AND STANDARDS

3.1 OVERVIEW

Modernization of the NAS is based on a total systems approach, as indicated by NAS Plan requirements. Such an approach relates the needs of the user community to technical opportunities, human factors, and operational considerations. Executing the NAS Plan encompasses the following: determining system architecture, contracting for equipment, identifying logistic considerations and describing training. Planning for system design, delivery and implementation requires an integrated approach. To facilitate planning, the FAA has adopted various orders, standards and system level documentation to ensure comprehensive system acquisition. Figure 3-1, System/Training Acquisition, describes the relationship of these FAA documents to system acquisition and training procurement.

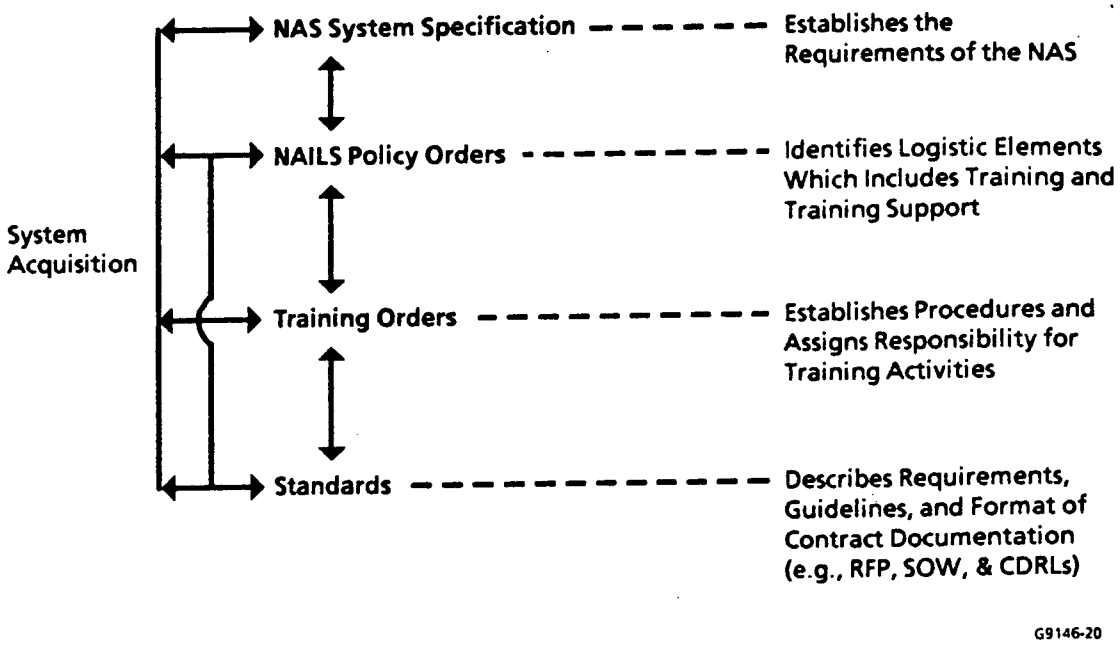

Figure 3-1, System/Training Acquisition

Figure 3-1, the NAS System Specification (further described in Section 3.4), defines the system and individual subsystem requirements. National Airspace Integrated Logistics Support (NAILS) related documentation (described in Sections 3.2 and 3.4) identifies logistics considerations (of which training is one element) and merges them into the planning and design processes for each NAS subsystem. Training elements identified via the NAILS process are implemented through the associated orders described in Section 3.2. FAA training policy is defined in FAA Order 3000.6B and further delineated in AF, AT, and FAA Academy orders. Standards which define contract requirements are identified in Sections 3.3 and 3.5. These standards provide guidance for preparing procurement packages and statements of work, as well as directions to the contractor for developing contract line items (e.g., Contract Data Requirements List (CDRLs) items for training and logistics support). Taken together, the guidance and direction provided by these documents allows the FAA to coordinate system and training acquisition.

These documents are then used by Program, Logistics and Training Managers within the FAA and the SEIC. The focus of these documents, particularly Training Orders, is a direct result of the current philosophy of training discussed in Chapter 2. Training for these systems is identified, validated and procured by the Service, FAA Academy, and Headquarters personnel identified in Chapter 4. Chapter 5 lists the systems and associated training planned for the NAS over the next five years.

3.2 TRAINING ORDERS, NOTICES AND MANUALS

The following sections describe the orders, standards and system level documentation that relate to NAS Plan training. Figure 3-2, Training Orders, shows the relationship between the training orders used by the FAA Academy and the Services and the contracting standard (FAA-STD-028) to the overall training policy.

3.2.1 Training, FAA Order 3000.6B

This Order establishes FAA training policy, procedures and program standards and assigns responsibility for training and training evaluation. FAA training will be operationally-oriented and job-centered. The training development process includes performing a job task analysis (JTA), determining objectives, and delivering and evaluating the training program. *[Each individual FAA or SEIC training manager is responsible for ensuring that FAA training is in compliance with established orders, notices, standards, and specifications dealing with training; service requirements; and the NAS Plan. FAA Order 3000.6B is currently being revised and was discussed previously in Chapter 2 of this document.]*

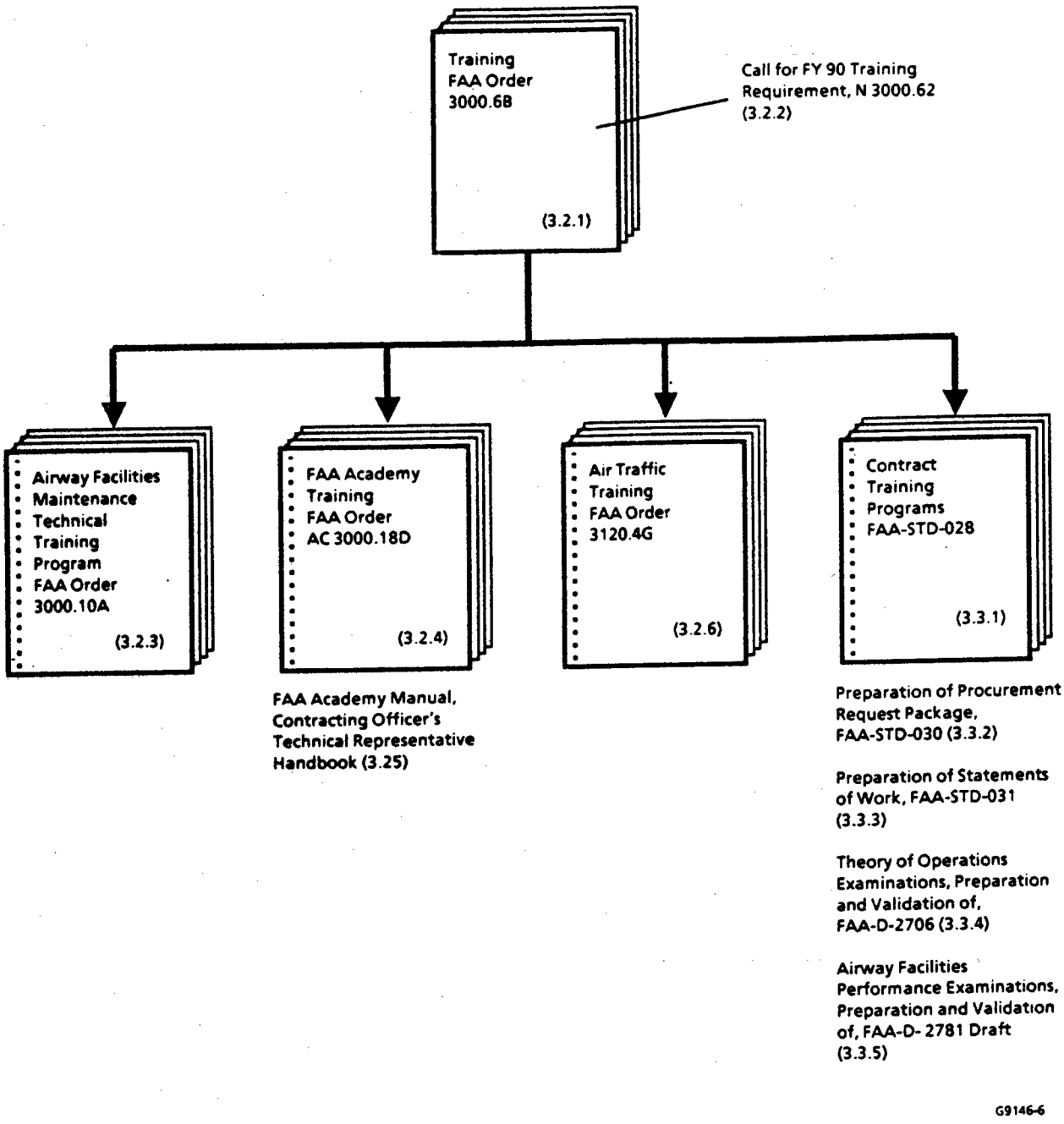

Figure 3-2, Training Orders

3.2.2 Call for FY 1990 Training Requirement, N 3000.62

This notice provides guidance and procedures to be used in developing agency training requirements and program objectives for FY 1990. Training requirements are categorized and Airway Facilities requirements are prioritized to provide a balanced distribution and to facilitate regional review. [Notice 3000.62 is updated and re-published each year.]

3.2.3 Airway Facilities Maintenance Technical Training Program, FAA Order 3000.10A

This Order provides supplementary training program guidelines and procedures for implementing the technical training program for the Airway Facilities technical work force and complements guidelines contained in Order 3000.6B, Training. Order 3000.10A provides guidance for establishing requirements for initial training on new equipment, proficiency training and guidelines for the development, conduct and evaluation of AF training.

3.2.4 FAA Academy Training, FAA Order AC 3000.18D

This Order describes policies, assigns responsibilities, and provides procedures for governing the administration and operation of agency training programs provided or arranged by the FAA Academy. The Order also provides guidelines for the analysis, design, development, implementation, and control of training programs and program materials produced or reviewed by the FAA Academy.

3.2.5 FAA Academy Manual, Contracting Officer's Technical Representative Handbook

This manual provides guidelines to FAA Academy staff designated as Contracting Officer's Technical Representatives (COTRs) for training. Training COTRs are formally designated to assist the Contracting Officer (CO) in contract administration. The manual describes the general acquisition and contract administration activities and the role of the Training COTR from the beginning of the acquisition to the completion of a contract. The contents of the manual are meant to be advisory.

3.2.6 Air Traffic Training, FAA Order 3120.4G

This order conveys instructions, standards and guidance for Air Traffic managers who administer Air Traffic training. It also addresses the identification of training requirements and the conduct of refresher, supplemental and remedial training.

3.3 FAA STANDARDS

3.3.1 Contract Training Programs, FAA-STD-028

This standard establishes the requirements for developing, conducting and validating contract training programs. It provides direction to the contractor, through Data Item Descriptions (DIDs), for developing contract deliverables. Training deliverables include Task Analyses, Contract Training Plans, Course Design Guides, Class Schedules, Lesson Plans, and Student's Guides. [This standard is currently under revision and was referenced in Chapter 2 of this document.]

3.3.2 Preparation of Procurement Request Package, FAA-STD-030

This standard describes requirements and guidelines the Project Manager uses when preparing inputs to Procurement Request (PR) packages. The inputs shall define the project requirements that offerors/bidders must act upon when responding to solicitations for systems, equipment and/or services. The standard establishes a uniform format and provides a general outline of the content to be included in the Procurement Request package.

3.3.3 Preparation of Statements of Work, FAA-STD-031

This standard provides the necessary information to prepare consistent, orderly, and complete descriptions of the work effort (tasks) to be performed by contractors in support of systems, equipment, and service contracts.

3.3.4 Theory of Operations Examinations, Preparation and Validation Of, FAA-D-2706

This specification describes the requirements for preparing and validating the Theory of Operations examination used in the Airway Facilities Personnel Certification Program for FAA personnel.

These written examinations are used to determine whether the examinee possesses the knowledge required to perform tasks on the specific equipment or system.

3.3.5 Airway Facilities Performance Examinations, Preparation and Validation Of, FAA-D-2781

This is a DRAFT specification dated 11 DEC 1985. This specification explains practices for preparing and validating Airway Facilities Performance Examinations used in the Personnel Certification Program for FAA personnel.

3.4 NAS SYSTEM LEVEL DOCUMENTS

Figure 3-3, NAS Plan Documentation, shows the relationship between the various NAS Plan documents.

3.4.1 NAS System Specification, NAS-SS-1000, Vols. I-V, Functional and Performance Requirements for the National Airspace System

This specification establishes the functional, performance design, manufacture/construction, logistics, personnel, and training documentation, verification and interface requirements for the FAA elements of the NAS. This specification contains the requirements for the NAS as it will exist in the 1995 timeframe. Volume I contains the general system-level requirements, while Volumes II-V contain requirements allocated to the individual subsystems.

3.4.2 NAS Level I Design Document, NAS DD-1000, Rev A

The document defines the basic NAS elements and their interrelationships and serves as one of several documents designed to direct the FAA and its support and engineering contractors in their collective efforts to accomplish a major upgrade of the NAS. The Level I Design represented the architecture of the NAS of the 1990's. Since the publication of the NAS System Specification, NAS-SS-1000, this document has been maintained as a NAS system description document.

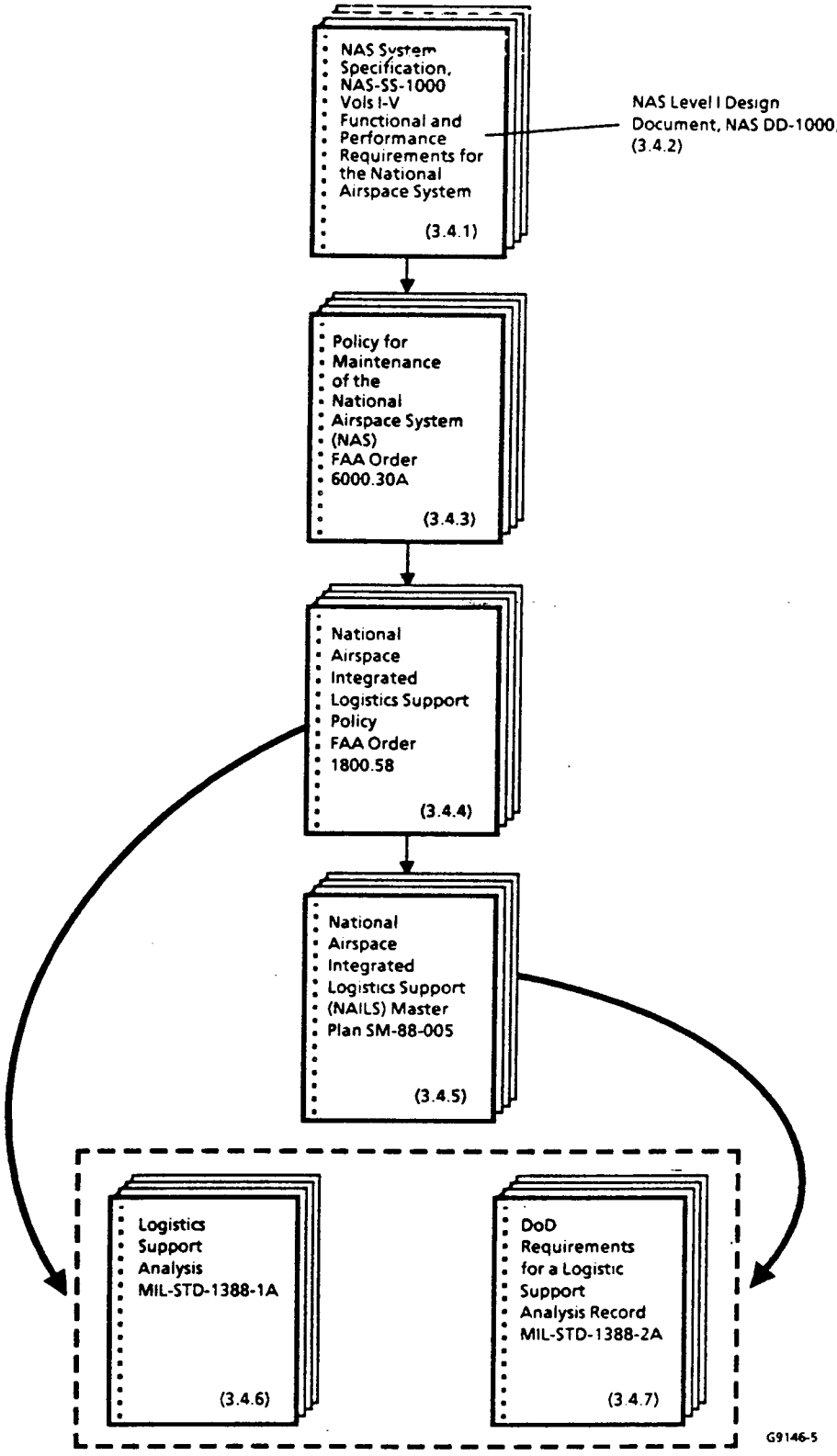

Figure 3-3, NAS Plan Documentation

3.4.3 Policy for Maintenance of the National Airspace System (NAS), FAA Order 6000.30A

This order transmits maintenance policy for NAS subsystems and equipment through the 1990's. Maintenance requirements include: acquiring subsystems and equipment with state-of-the-art technologies; the use of a Remote Maintenance Monitoring capability, to some degree, on all NAS systems; incorporating the National Airspace Integrated Logistics Support process; and the use of modular design techniques so that on-site repair will be limited to the line replaceable unit.

3.4.4 National Airspace Integrated Logistics Support Policy, FAA Order 1800.58

This Order establishes FAA policy for the National Airspace Integrated Logistics Support plan for subsystem acquisitions, major modifications, and applicable research and development projects in the NAS. NAILS elements include the following logistics support resources: direct-work staffing; maintenance support facilities; maintenance planning; packaging, handling, storage, and transportation; computer resources support; supply support; support equipment; technical data; and training and training support. *[Each individual FAA or SEIC logistics manager is responsible for the practical application of the integrated logistics support process during acquisition and throughout the life-cycle of the system. The nine elements listed above represent functional areas which are individually managed by technical specialists, and encompass the NAILS Team. Logistics Managers should be familiar with orders, notices, standards and specifications dealing with logistics in general, as well as governing documents of the nine NAILS elements.]*

3.4.5 National Airspace Integrated Logistics Support (NAILS) Master Plan, SM-86-005

The NAILS Master Plan is designed to identify NAILS requirements and explain how NAILS programs are incorporated into the overall NAS structure. The policies outlined in the NAILS Master Plan are applied to each project by the project Integrated Logistics Support Plan (ILSP). The ILSP outlines the approach for merging logistics considerations and planning into the engineering and design process for each NAS subsystem. The principle tool for identifying and documenting support resource requirements is the Logistics Support Analysis (LSA). Examples of LSA data outputs include: number of spares; repair parts and consumables; consumption and usage rates; recommended allowances; supply storage requirements; maintenance concept and technical documentation.

3.4.6 Logistic Support Analysis, MIL-STD-1388-1A

This standard provides general requirements and task descriptions governing performance of Logistic Support Analysis during the system and equipment life cycle. This standard provides a single, uniform approach for conducting those activities necessary to: (a) cause supportability requirements to be an integral part of system requirements and design, (b) define support requirements that are optimally related to the design and to each other, (c) define the required support during the operational phase, and (d) prepare attendant data products.

3.4.7 DOD Requirements for a Logistic Support Analysis Record, MIL-STD-1388-2A

This standard prescribes the data element definitions, data field lengths, and data entry requirements for Logistic Support Analysis Record (LSAR) data. The goal is to establish a standard directed toward improving the cost effectiveness of the generation, maintenance, acquisition and use of the technical data required to support an Integrated Logistic Support program. This is accomplished through: (a) standardization of LSAR data, (b) consolidation of logistics-oriented technical information, and (c) maximum use of industry-developed data systems as sources of LSA documentation.

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4 CURRENT FAA TRAINING

4.1 OVERVIEW

Training is conducted by the FAA on a system-wide basis -- from training of newly hired technicians to the recurrent training of Full Performance Level Air Traffic Controllers. Accomplishing this training is a complex process that requires organizational efficiency, productive communication, careful planning, and personal dedication by the training staffs and all assigned personnel. Figure 4-1, Training Structure, depicts the existing interrelationships which allow this complex system to function.

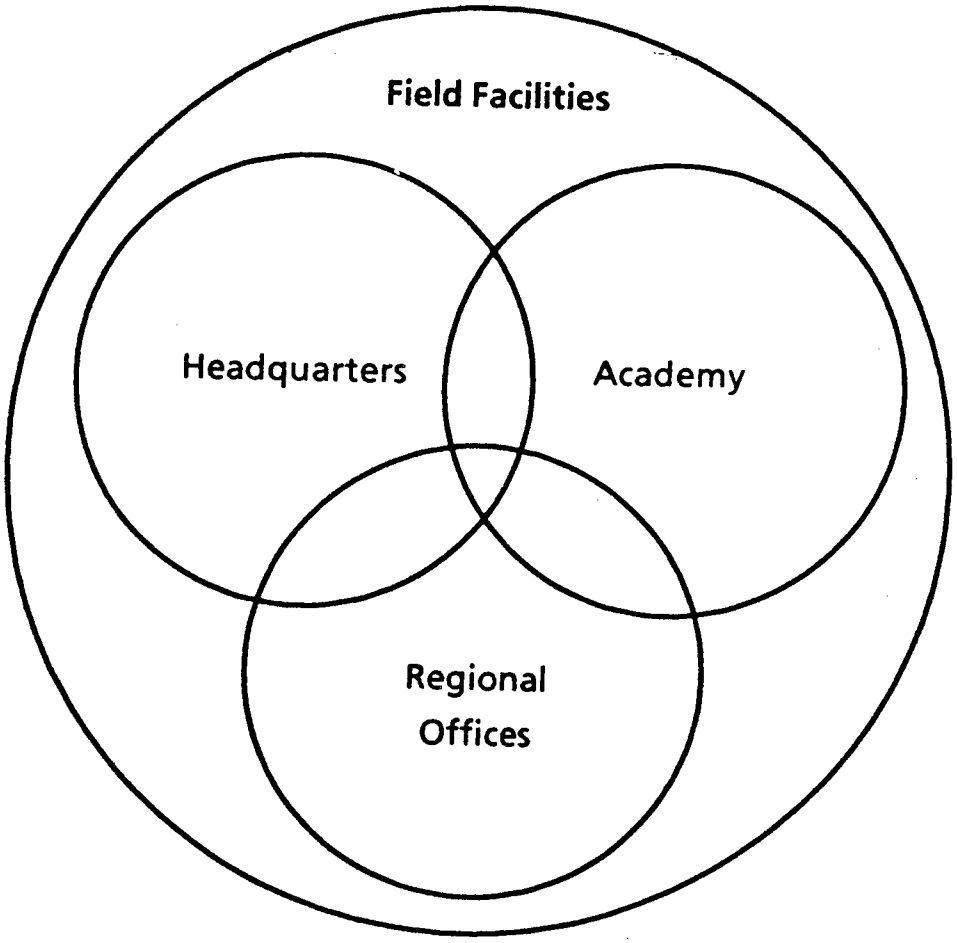


Figure 4-1, Training Structure

The Academy comprises the operational training entity -- ensuring that the necessary programs are standardized, efficient, and serve the training needs of the FAA. In this chapter, Section 4.2 describes the FAA Academy's role in supporting current and ongoing service to FAA operational entities. Section 4.2 also defines the roles, responsibilities, and organizational structure of the Air Traffic and Airway Facilities branches. The staff in each Regional Office interacts with Headquarters and the field facilities to provide two-way communication of quota allocations and requirements for both planned initial NAS training and attrition training for existing equipment and systems. Section 4.3 presents roles and functions of the Regional training offices, with special emphasis on planning, coordination, and organization. The staff in each Field Facility interacts with the Region to ensure training accomplishment, to provide the "grass roots" training requirement identification, and to plan and execute training for each assigned individual. Section 4.4 presents the organization and function of the field facilities. Headquarters provides policy and guidance, procures the equipment and systems, and interacts with the FAA Academy and the Regions to ensure that training requirements are met. Section 4.5 of this chapter describes the role of the Headquarters Office in Washington, D.C..

This chapter describes the current administrative interfaces and technical activities that comprise the FAA's training system. Where Chapter 2 provides insight into the <u>future</u> of FAA training, Chapter 4 presents information about how various FAA organizations currently use the Orders and Standards (described in Chapter 3) to implement <u>existing</u> training. Chapter 5 covers projected NAS Plan training and Chapter 6 describes eight training initiatives that impact the FAA training organizations.

4.2 FAA ACADEMY

The FAA Academy's mission, management, guiding policies and procedures, and organizations are described in the following sections.

4.2.1 Mission

The FAA Academy provides agency and out-of-agency national training for FAA employees and other Government and non-Government personnel as assigned by the Office of Training and Higher Education (AHT-1); provides assistance with International and Student Liaison Affairs; administers the Mike Monroney Aeronautical Center (MMAC) Flight Safety and Aircraft Rental Programs; and provides aviation weather services for flight activities at the MMAC.

4.2.1.1 Functional Responsibilities

Major functional responsibilities of the FAA Academy are to:

1) Provide staff assistance to the Director, MMAC, on all matters pertaining to the administration and operation of training programs for which the FAA Academy has been assigned full or partial responsibility.

2) Participate in the gathering of training requirements information and schedule training courses and activities as programmed.

3) Train FAA personnel.

4.2.2 Management/Supervisory Responsibilities

The FAA Academy is an operations division, responsible for FAA training, reporting directly to the Director, MMAC. The Office of the FAA Academy Superintendent, through the Assistant Superintendent, has first-line supervisory authority and responsibility for each of the nine subordinate staff/branch offices as depicted in Figure 4-2, FAA Academy Organization, and briefly described below.

1) The Training Methods and Operations Branch, AAC-910, is responsible for a range of national training programs and allied activities which contribute directly to the delivery of all technical training to agency employees and other aviation-related organizations. The branch mission includes the monitoring of FAA Academy training programs to assure that the training products are delivered in a cost-effective manner and that agency program objectives are achieved. One of the primary operational responsibilities is the planning, analysis, authoring, implementation, administration, and maintenance of Computer Based Instruction courses.

2) The Air Traffic Branch, AAC-930, provides instruction for air traffic personnel, and develops and provides instructional material for use in AT training. This branch will be discussed in depth subsequently in this chapter.

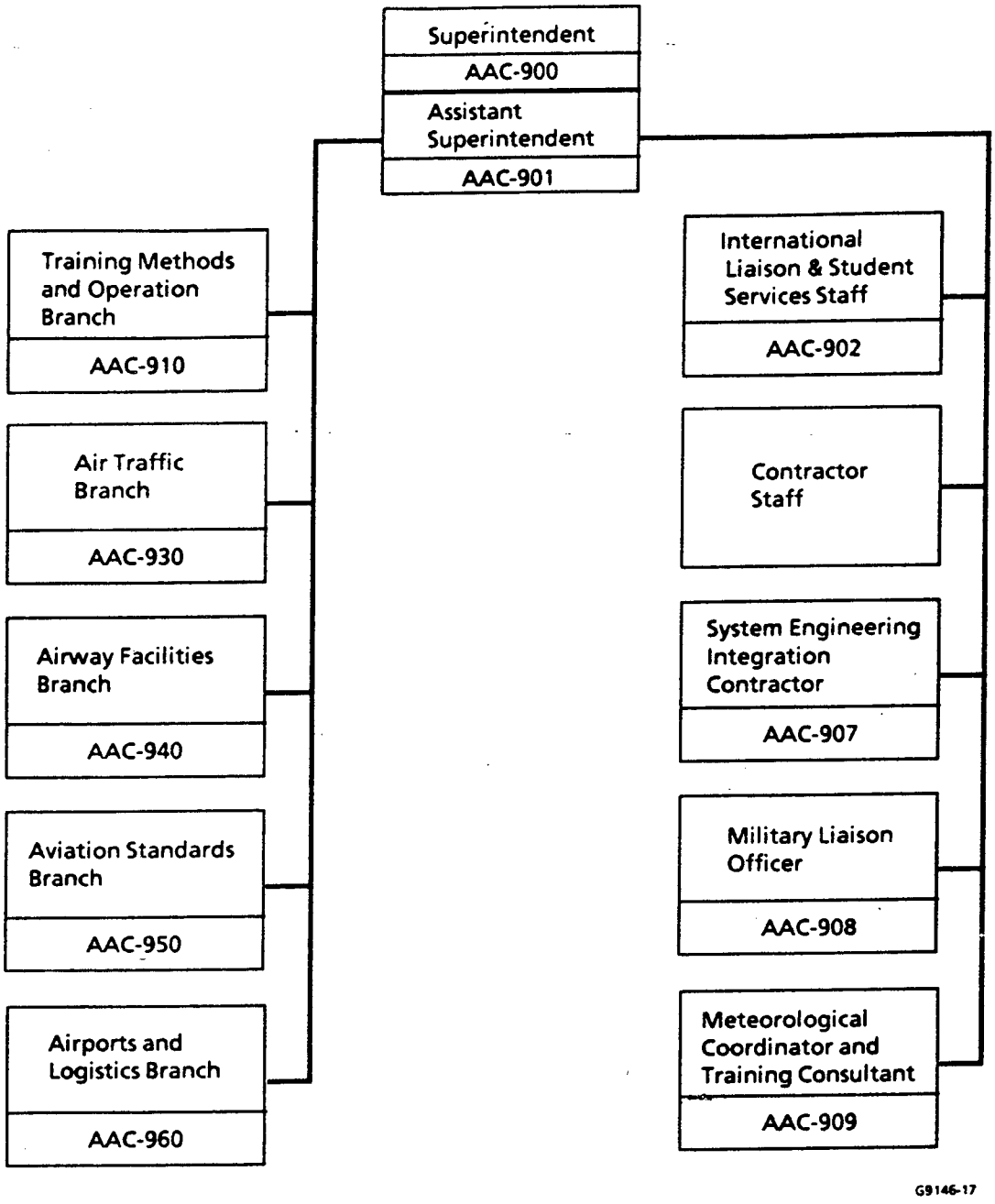


Figure 4-2, FAA Academy Organization

3) The Airway Facilities Branch, AAC-940, conducts resident, nonresident, and correspondence study courses to meet system-wide airway facilities training requirements. This branch will also be discussed in depth subsequently in this chapter.

4) The Aviation Standards Branch, AAC-950, is responsible for the planning, coordination, and direction of the Training Program designed to assist in maintaining technical proficiency of agency flight and operations personnel charged with the responsibility of: insuring airworthiness of aircraft and aircraft systems; examining qualifications and ratings of airmen; and providing operational support to the aerospace system.

5) The Airports and Logistics Branch, AAC-960, provides agency and out-of-agency national training in the following areas: airport planning, design, construction, safety certification, administration and control; and supply/material,procurement, quality control, and real estate.

6) The International Liaison and Student Services Staff, AAC-902, plans and administers a program to ensure international and domestic student indoctrination to the FAA Academy and to assist them in the acquisition of non-academic services (i.e., housing, transportation, etc.).

7) The FAA Academy staff is augmented by contractor personnel who support developmental training, curriculum development, and provide additional instructor assets as required.

8) The System Engineering Integration Contractor (AAC-907) provides technical support and services, as required, to several agency programs by participating in research and development projects, equipment modification and experimentation, and evaluation of procedures and equipment.

9) The Military Liaison Officer, AAC-908, provides administrative and services support to Department of Defense personnel while at the FAA Academy and provides a central contact

point between the military services and the FAA Academy.

10) The Meterological Coordinator and Training Consultant, AAC-909, provides support to the FAA Academy in weather-related training matters and aviation weather services for MMAC flight activities.

4.2.3 Policies and Procedures

National policies and guidance pertinent to the operation and logistic support provided by the FAA Academy are for the most part covered in FAA Orders, Notices, Directives, and Handbooks written by Headquarters. National policies and guidance relative to NAS system/equipment are generally provided by the Associate Administrator for NAS Development (AND-1), Associate Administrator for Airway Facilities (AAF-1), and Associate Administrator for Air Traffic (AAT-1). Other directives containing policy and guidance relative to specific program support are provided by the respective Headquarters Program Offices, i.e., Office of Training and Higher Education, Office of International Aviation, Office of Budget, etc. In addition, FAA Academy training functions are augmented by MMAC policies and guidance, as published in MMAC Orders and Supplements to FAA Orders, FAA Academy policies, and Notices.

4.2.4 Training Contracting Officer's Technical Representative

To support the NAS Plan acquisition programs, the FAA Academy formally nominates Training COTRs to assist the Contracting Officer to administer the contractual training elements. Selection of a Training COTR from the FAA Academy staff (normally from AAC-930 or AAC-940) is based on technical competence, experience, and program management ability. The Training COTR works with the contractor to help identify problems related to work progress, interpretation of contract items, delivery schedules, review and acceptance of contract deliverables, and other training-related contract details.

4.2.5 Air Traffic Branch (AAC-930)

The FAA Air Traffic Branch (AAC-930), illustrated in Figure 4-3, FAA Academy Air Traffic Branch, provides instruction for operational 334 and 2152 series personnel. It also develops and provides instructional material for use in training.

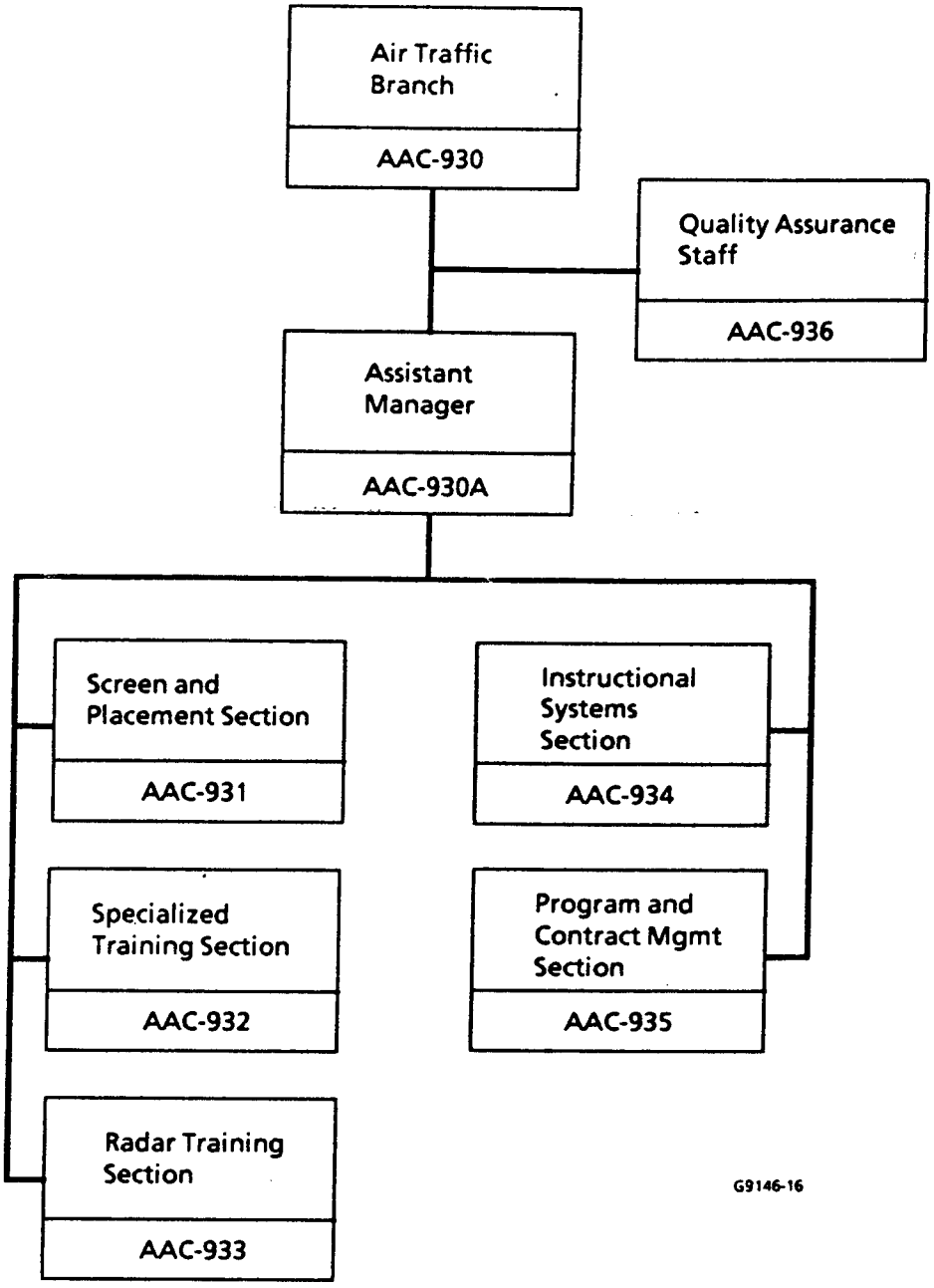


Figure 4-3, FAA Academy Air Traffic Branch

4.2.5.1 Functional Responsibilities

Responsibilities of the Air Traffic Branch include:

1) Conducting resident, nonresident, and directed study courses to meet system-wide AT training requirements, as provided for in the National Air Traffic Program designed for operational 2152 series personnel.

2) Developing training plans and programs of instruction, training manuals, performance appraisal instruments, audio-visual aids, and other similar materials required in the accomplishment of branch programs and the National Air Traffic Training Programs.

3) Providing professional advice and assistance in developing: standardized AT training programs and courses; schedules curricula, objectives, and requirements related to AT training; standards for admission to AT resident courses; student progress and performance evaluation methodology; AT training program effectiveness methodology.

4) Implementing minor revisions and recommending major revisions to approved AT training programs.

5) Maintaining liaison with the Office of Training and Higher Education (AHT), Air Traffic Service, the Office of International Aviation and field offices, to keep abreast of operational developments which may affect training requirements and to determine the suitability of training provided by the branch in relation to operation requirements of the field.

6) Maintaining liaison with all military services to provide support to military training programs.

7) Developing instructional material for use by the field training teams, field offices, and installations when they conduct training.

8) Administering the Control Tower Operator Certification and Rating Program.

9) Providing logistical and administrative support to regional air traffic divisions in determining appropriate option and facility placement for new air traffic controllers.

10) Administering National pass/fail criteria developed by the FAA Headquarters. Through application, evaluation and statistical analysis, provides suggestions for recommended operational and procedural changes.

11) Accomplishing branch responsibilities involving program control, personnel management, space utilization, printing liaison, property management, supply and equipment requirements, travel documentation, class scheduling, and other required administrative reports and records.

4.2.5.2 Quality Assurance Staff (AAC-936)

The Quality Assurance Staff (AAC-936) designs and directs the evaluation efforts of the AT Branch including the analysis of curriculum development, instructional delivery and administration of resident courses, administration of instructor orientation training to ensure standardization among the instructor work force, and the operational administration of all branch offices. In addition, the Quality Assurance Staff ensures efficiency and standardization in aviation safety-related training programs by providing classroom and laboratory audits and monitors as required.

4.2.5.3 Screen and Placement Section (AAC-931)

The Screen and Placement Section (AAC-931) provides administrative and instructional services for the National Air Traffic Training Programs, and the evaluation and placement of students in either the en route (center) or terminal (tower) follow-on training. AAC-931 also conducts the FAA Academy portion of the National Air Traffic Flight Service Training Program. It recommends and coordinates program changes with the Revision and Development Section and provides liaison with the contract instructor supervisor in all matters concerning the contract instructors. Figure 4-4, Air Traffic Developmental Training, illustrates the progressive steps of student developmental training in AAC-931.

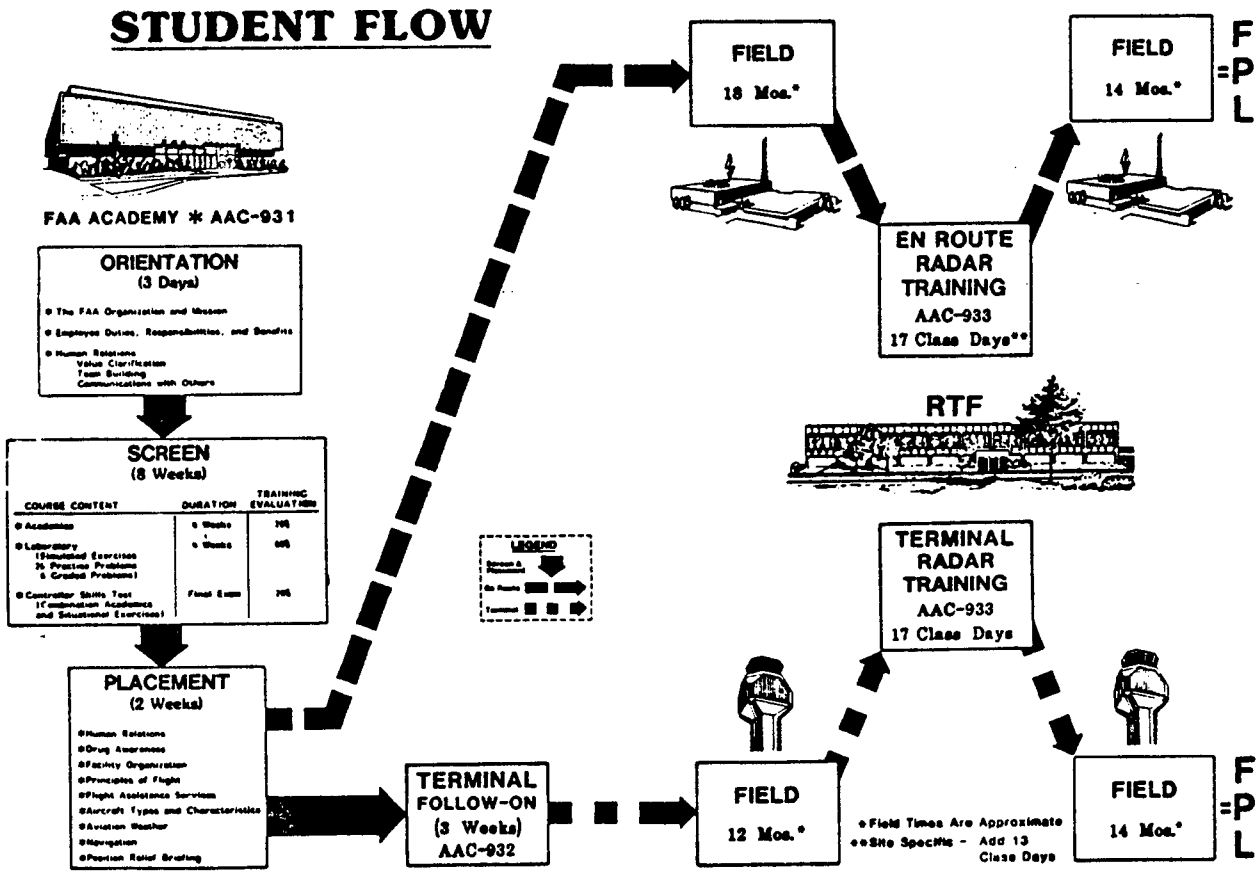


Figure 4-4, Air Traffic Developmental Training

4.2.5.4 Specialized Training Section (AAC-932)

The Specialized Training Section (AAC-932) accomplishes the administration and instruction of FAA Academy-conducted training. It is responsible for the National Air Traffic Terminal Training Programs, as well as training for employees at Full Performance Level (FPL) through the Headquarters supervisory level. The training targeted to the FPL level and above includes automation, airspace management, and other specialized training in advanced training courses. This section develops, maintains, administers, and conducts automation, facility training administration, airspace management, and AT facility management FPL training. It recommends and coordinates changes to the follow-on program with the Instructional Systems Section, providing liaison with the contract instructor supervisor in all matters concerning the contract instructors. See Figure 4-4, Air Traffic Developmental Training, for an illustration of AAC-932's role in student developmental training.

4.2.5.5 Radar Training Section (AAC-933)

The Radar Training Section (AAC-933) conducts the FAA Academy portion of the National Air Traffic En Route and Terminal Programs as they relate to radar instruction in an automated environment. It recommends and coordinates changes to the program with the Revision and Development Section, providing liaison with the contract instructor supervisor in all matters concerning the contract instructors. See Figure 4-4, Air Traffic Developmental Training, for an illustration of AAC-933's role in student developmental training.

4.2.5.6 Instructional Systems Section (AAC-934)

The Instructional Systems Section (AAC-934) develops, revises, and maintains training plans, courseware, instructor guides, and support and examination materials for resident and nonresident AT training programs. AAC-934 develops and maintains control documents for assigned courses, Computer Based Instruction, radar simulation development, and special courses as assigned. It develops and maintains the Control Tower Operator Certification and Rating Program, Pre-Developmental Program, and the Cooperative Education Program and provides liaison with the contract developer supervisor.

4.2.5.7 Program and Contract Management Section (AAC-935)

The Program and Contract Management Section (AAC-935) provides management at the branch level for a variety of programs, budget

items, contracts, special projects, administrative functions, and human resources.

4.2.6 Airway Facilities Branch (AAC-940)

The Airway Facilities Branch (AAC-940), illustrated in Figure 4-5, FAA Academy Airway Facilities Branch, conducts resident, nonresident, and correspondence study courses to meet system-wide Airway Facilities training requirements.

4.2.6.1 Functional Responsibilities

The Airway Facilities Branch (AAC-940) develops training plans and programs of instruction, programmed lesson plans, training manuals, performance appraisal instruments, audiovisual aids, and other similar materials required for branch programs and the National Airway Facilities Training Program. The responsibilities of the Airway Facilities Branch include:

1) Providing professional advice and assistance in developing: standardized AF training programs and courses, schedules, curricula, objectives, and requirements related to AF training; standards for admission to AF resident courses; methodology for determining student progress and performance; AF training program effectiveness methodology;

2) Implementing minor revisions and recommending major revisions to approved AF training programs;

3) Maintaining liaison with the Office of Training and Higher Education, appropriate Services, the Office of International Aviation and field offices, to keep abreast of operational developments which may affect training requirements, and determining the suitability of training by the branch in relation to field operating requirements;

4) Maintaining liaison with all military services to provide support for military programs, as required, and preparing program control of fiscal and manpower resources as approved for the branch;

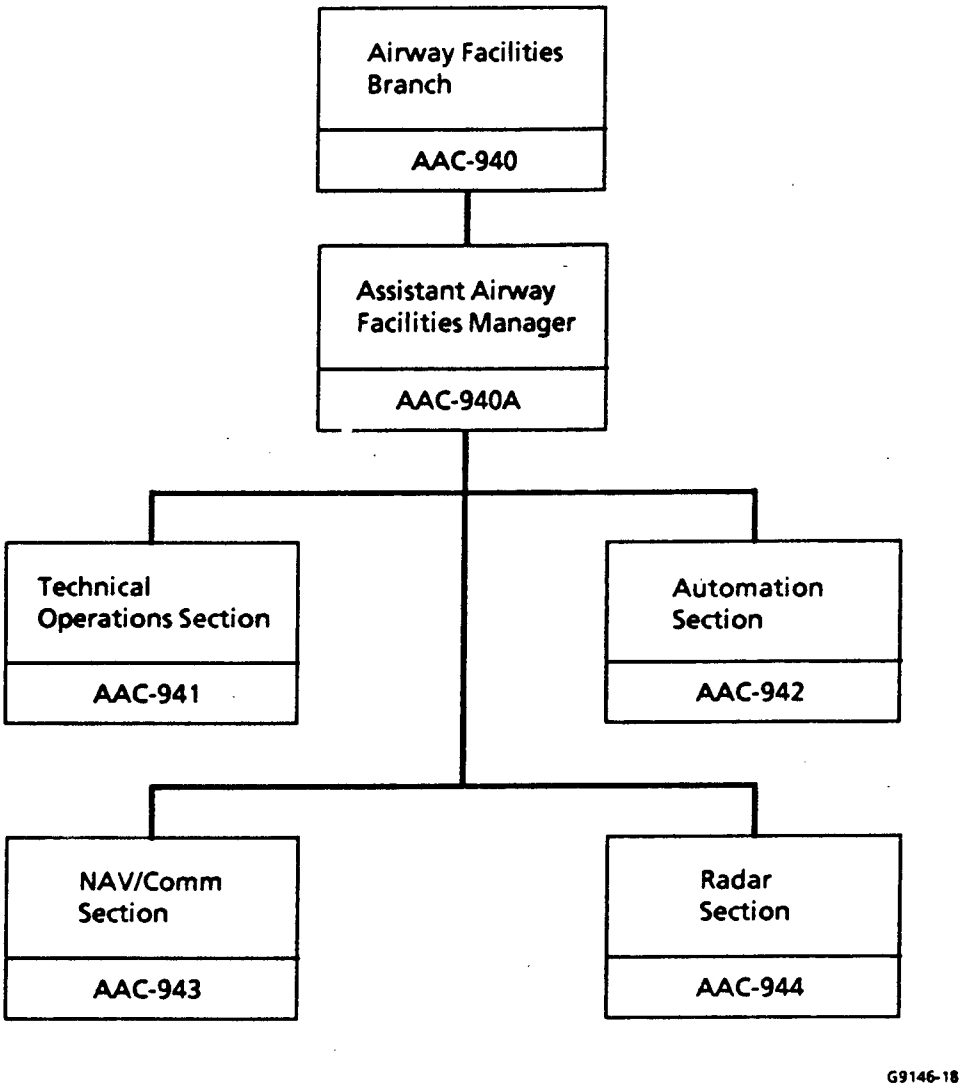


Figure 4-5, FAA Academy Airway Facilities Branch

5) Integrating the resident, directed study, and On-the-Job Training phases into a coordinated program to meet career field needs;

6) Providing technical explanation and guidance to students enrolled in established AF directed study training programs; and,

7) Providing technical services to the Washington Office, FAA Technical Center, Mike Monroney Aeronautical Center, and field staffs on technical handbook development, equipment modifications, acquiring research data, and development of training specifications in the assigned career areas.

4.2.6.2 Technical Operations Section (AAC-941)

The Technical Operations Section (AAC-941) accomplishes the branch functions pertaining to resident and CBI development, major course revision, educational training guidance and support, out-of-agency training, National Airway Facilities Personnel Certification Program, NAS library, personnel actions and records, Consolidated Personnel Management Information System (CPMIS), Management Information System (MIS), Contracting Officer's Technical Representative assistance program, property accountability, budget, workspace allocations, procurement actions, and public relations/tours. AAC-941 provides computer operator support and assistance for AF and AT Branch Training Programs.

4.2.6.3 Automation Section (AAC-942)

The Automation Section (AAC-942) provides the branch functions for training programs on the principles of data processing, data processing equipment systems, NAS Input/Output (I/O) devices, Computer Update Equipment (CUE), associated devices, and other courses as assigned.

4.2.6.4 Navigation/Communication Section (AAC-943)

The Navigation/Communication Section (AAC-943) provides the branch functions for training programs for the Instrument Landing System (ILS), Very High Frequency Omnidirectional Range (VOR), Tactical Air Navigation (TACAN), communications equipment, electro-mechanics, Runway Visual Range (RVR), Direction Finder (DF), electronic technician qualification, and other courses as assigned.

4.2.6.5 Radar Section (AAC-944)

The Radar Section (AAC-944) provides the branch functions for training programs on Common Digitizer (CD) systems, Automated Radar Terminal Systems (ARTS), radar principles, radar systems, radar-associated equipment, Mode S (discrete addressable secondary radar system with data link), and other courses as assigned.

4.2.6.6 Classroom/Laboratory Facilities

The classroom facilities for AF training are of standard configuration. Portable videotape capability is available to most classrooms, and some rooms are equipped with computer-assisted learning terminals.

Laboratory facilities are generally equipment-specific and contain specialized equipment to be used in the field facilities. The laboratories are used almost exclusively for lab purposes, with no other learning objectives designed for the spaces.

4.2.7 Aviation Standards Branch (AAC-950)

The Aviation Standards Branch is responsible for planning, coordinating, directing, and conducting a training program that maintains technical proficiency of agency personnel involved in regulatory standards and compliance.

4.2.7.1 Functional Responsibilities

The Branch accomplishes program control, personnel management, space utilization, printing liaison, property management, supply and equipment management, travel administration, class scheduling, quota utilization and produces administrative reports and records. One of the primary operational responsibilities is to administer the Mike Monroney Aeronautical Center Flight Safety program which includes aircraft accident/incident investigation and reporting. Other responsibilities include chairing the Aircraft Simulator Baseline Configuration Control Board to regulate and control operation and logistical support of the B-727 aircraft simulator, administering the MMAC Aircraft Rental Program, and providing maintenance and modification to simulators, flight trainers, and other aircraft-related training aids.

4.2.7.2 Air Carrier Operations Section

The Air Carrier Operations Section plans, develops, and administers job-centered technical training courses, primarily to air carrier operations personnel. It also provides technical support and services as required by participating in special projects concerning research and development, modification and experimentation with equipment, evaluation of procedures, proposed standards, special training and related areas.

4.2.7.3 Airworthiness Section

The Airworthiness Section plans, develops, and administers job-centered technical training courses, primarily to aerospace engineers, manufacturing and airworthiness inspectors, flight inspection personnel and avionics technicians responsible for flight inspection equipment.

4.2.7.4 General Operations and Airspace Section

The General Operations and Airspace Section plans, develops, and administers job-centered technical training courses to aviation safety inspectors, airspace system inspection pilots and technicians, and airspace procedures specialists. Additionally, it administers the Aircraft Rental Program for general aviation aircraft.

4.2.7.5 Technical Programs Section

The Technical Programs Section administers the Aviation Standards Out-of-agency Training Program and the MMAC Flight Safety Programs. It coordinates branch CBI activities and provides technical support and maintenance for flight simulators, flight trainers, procedures trainers, aircraft systems training boards, and other aircraft-related training equipment using assigned training courses. It also designs, develops, and incorporates modifications to this equipment.

4.2.8 Simulator Capabilities

The FAA Academy's simulator capability will consist of the Radar Training Facility (RTF), the Tower Simulator, and the Boeing 727 6-axis aircraft simulator.

4.2.8.1 Radar Training Facility

The Radar Training Facility at the FAA Academy provides initial training for all radar controllers, using computer simulation of air traffic in synthetic airspace sectors. Site-specific equipment simulates actual existing airspace for advanced training in specific sectors. The site-specific program was implemented in April 1986, at the request of the Chicago ARTCC, to augment that facility's training capability. This was done by simulating, at the FAA Academy, the exact traffic and airspace in two of Chicago Center's sectors; hence, the name "site-specific".

This total immersion program, with playback capabilities not available in the field, has been responsible for a dramatic reduction in sector checkout times. Oakland and Los Angeles Centers have joined the program with Chicago and Oakland ARTCC's reporting an average saving of 40% in time required to produce an "operational controller" certified on two sectors in their area of specialization. At least three regions are also considering site-specific training for terminal radar equipment. The Coast Terminal Radar Approach Control (TRACON) at El Torro, California has implemented an RTF-like site-specific training program. The focus is on assisting facilities most in need to meet their controller staffing levels.

The RTF-like computer system at the FAA Academy currently operates at 97% capacity daily. Additional training objectives require an extensive upgrade of equipment and expansion of physical facilities. These initiatives are ongoing.

4.2.8.2 Tower Simulator (TOWER SIM) Project

The development of a computerized full-scale Tower Simulator, (like the one illustrated in Figure 4-6, Tower Simulator) is of continuing interest to the Air Traffic Branch. The simulator will provide students who have completed the Screen and Placement phases at the FAA Academy with a realistic training environment. Simulation of numerous FAA tower components (through use of a 210 degree panoramic screen displaying computer generated targets, instructor/student operating positions, and advanced hardware/ software capable of providing complex traffic situations and variable real-time scenarios) will enhance the students' exposure to what can happen once they report to the field. Areas of concern, such as emergencies and runway incursions, can be easily addressed and presented to the students in varying degrees of difficulty.

A unique feature of the TOWER SIM project is the Tower Lab, which will be capable of processing "voice input" controller commands via computers, and then interpreting, replying to, and acting

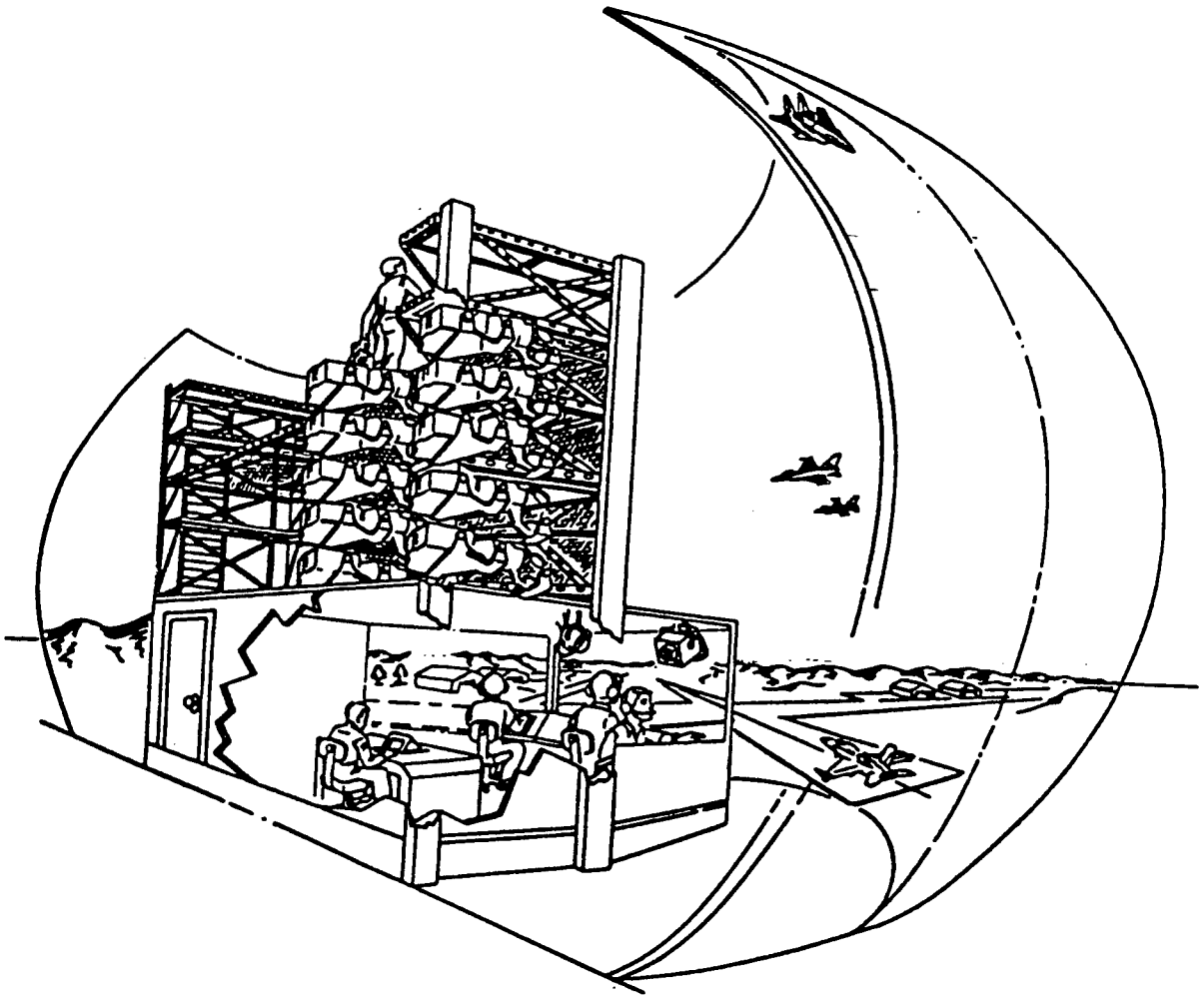


Figure 4-6, Tower Simulator

upon these controller instructions through the computer without the aid of "ghost pilots". Each student station (operating position) is projected to have a 250-utterance capacity for both voice recognition and voice generation. The computer will have the capacity to allow different words to have the same meaning and will recognize actions required for each utterance, with minimum time delay between control instruction recognition and compliance. The voice recognition unit will supply feedback to all voice inputs whether the inputs are correct or incorrect, recognized or unrecognized. Conformance recognition will be based on phraseology prescribed in the Air Traffic Control Handbook 7110.65. Computer clearance readback utterances will simulate pilot communications with a unique voice for each aircraft. Regional accents and voice inflections will not hinder computer processing of the "clearance" as long as the phraseology is correct.

Benefits of this proposed TOWER SIM project will be to:

1) Decrease check-out time through increased student learning rate due to constant and consistent reinforcement of procedures;

2) Allow the FAA Academy to graduate a more "field-ready" controller;

3) Foster quality training and student development of good operating practices through standardized pattern repetition;

4) Remove "technique variables" caused by the personality differences of individual instructors.

4.2.8.3 Non-Radar Laboratory Facility

This facility provides the en route and terminal student with the capability to simulate air traffic control under a non-radar environment. When that simulation is conducted during the screening phase of training, the student uses flight strips, radio simulation, and land line simulation to adjacent centers and Flight Service Stations (FSSs), to develop an understanding of, and procedures for, the control of aircraft without radar assistance.

4.2.8.4 Tower Cab Mock-Up

The Tower Cab Mock-Up provides a "hands-on" experience for the student participating in tower controller training. An airport surface table which simulates an airport environment, complete with realistic aircraft models, is integrated with a simulated tower cab module. Equipped with a communications suite designed to generic tower specifications, this module provides real-time control situations for the student. A computer program emulates a Flight Data Entry and Printout (FDEP) machine by printing the required flight progress strips for the simulated exercise. Two Tower Cab Mock-Up simulators are currently operating, providing job-centered training for eighty students per month.

4.2.8.5 Boeing 727 6 Axis Aircraft Simulator

The 727 aircraft simulator provides training in the operation of a Boeing 727 aircraft. The student is provided the feel of actually flying the aircraft.

4.3 REGIONAL OFFICES

This section describes how the nine FAA Regions plan, coordinate, and assist field facilities in accomplishing required NAS Plan training for assigned personnel.

Figure 4-7, Regional Organization, depicts a basic regional organizational structure. This figure illustrates straight line interface between the Program Divisions, depicted in Figure 4-8, and the Personnel Management Division depicted in Figure 4-11.

4.3.1 Air Traffic Division, AXX-500

The Plans and Programs Branch (AXX-510) of the Air Traffic Division, illustrated in Figure 4-9, Regional Air Traffic Division, is responsible for the following training functions:

1) Reviews and analyzes training requirements received from Air Traffic field facilities, and coordinates these requirements with the Operations Branch.

2) Reviews and analyzes training requirements; consolidates requirements; and develops the regional training plan. Establishes priority of need for a regional program and recommends establishment of new national training programs to meet field training requirements. Identifies the need for Air Traffic technical training programs; recommends specific training courses and programs.

The primary interface between the Air Traffic Division and the FAA Headquarters is the Air Traffic Training Requirements and Certification Branch, AAT-14.

4.3.2 Airway Facilities Division, AXX-400

The Maintenance Operations Branch (AXX-460) of the Airway Facilities Division (depicted in Figure 4-10, Regional Airway Facilities Division) is responsible for the following training functions:

1) Reviews and analyzes training requirements received from maintenance facilities, and coordinates these requirements with the Program and Planning Branch.

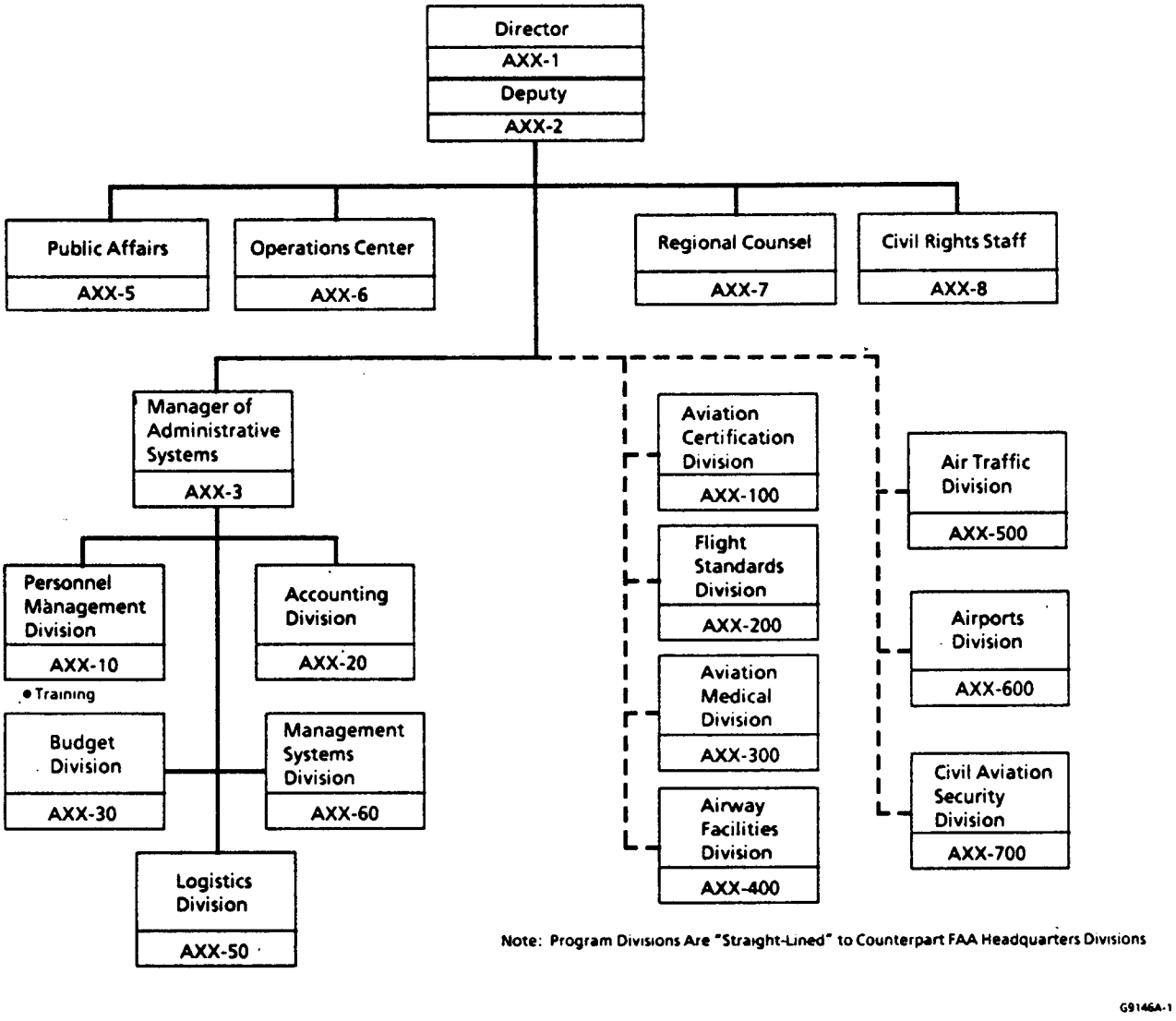


Figure 4-7, Regional Organization

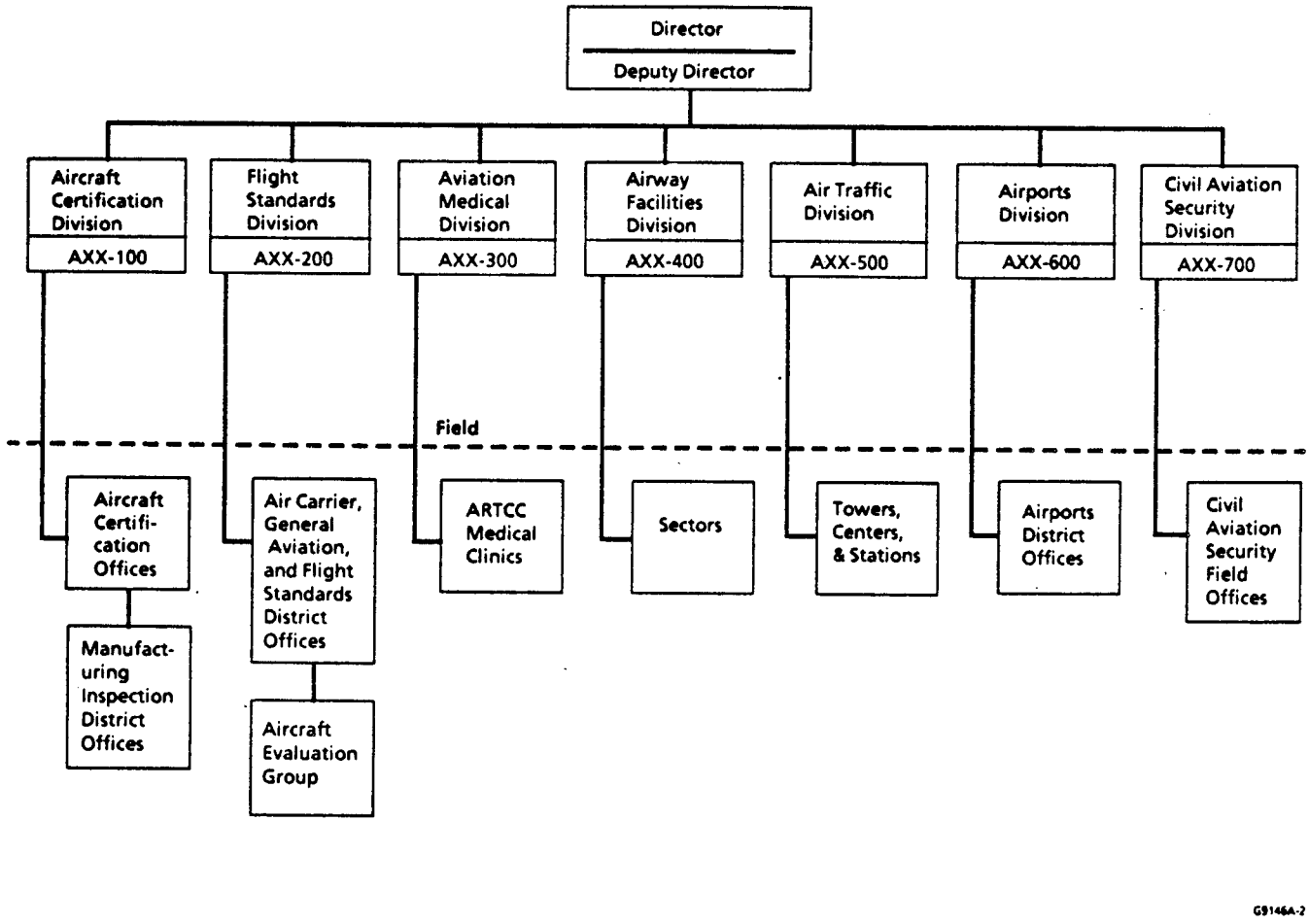


Figure 4-8, Regional Program Divisions

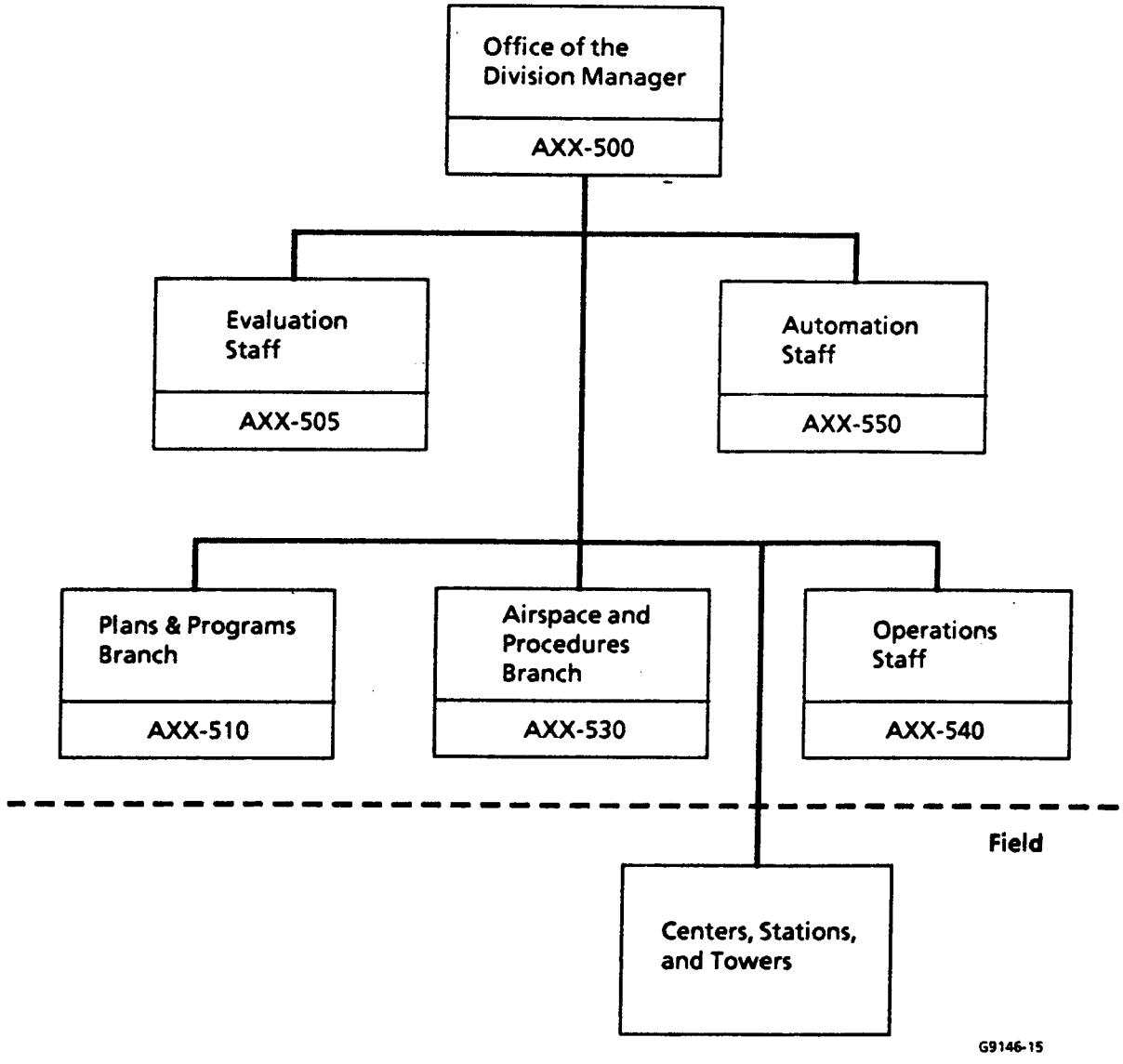


Figure 4-9, Regional Air Traffic Division

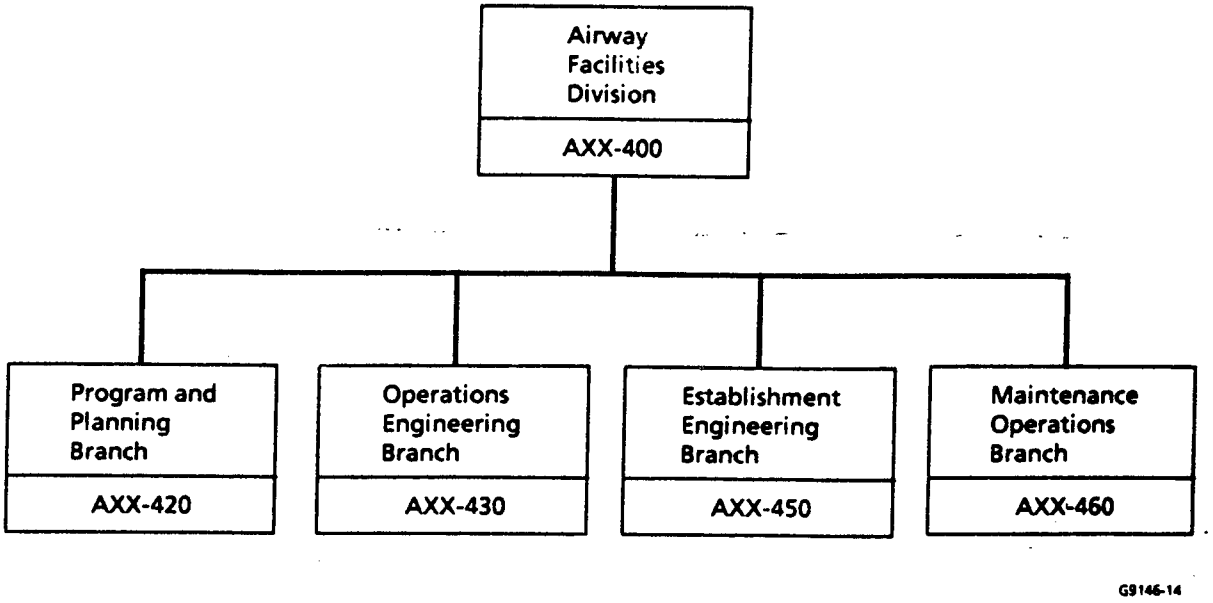


Figure 4-10, Regional Airway Facilities Division

2) Reviews and analyzes training requirements; consolidates requirements; and develops the regional training plan. Establishes priority of need for a regional program and recommends establishment of new national training programs to meet field training requirements. Identifies the need for maintenance technical training programs; recommends specific training courses and programs.

The primary interface between the Airway Facilities Division and FAA Headquarters is the AF Work Force Requirements Program Branch, ASM-210.

4.3.3 Personnel Management Division, AXX-10

The Personnel Management Division serves as the principal organization within the region on all matters pertaining to personnel management (which includes the full range of the personnel, training, labor relations, and occupational safety functions) through the organization shown in Figure 4-11, Regional Personnel Management Division.

Significant to the FAA training community efforts is the training quota management function provided by the Personnel Management Division through CPMIS.

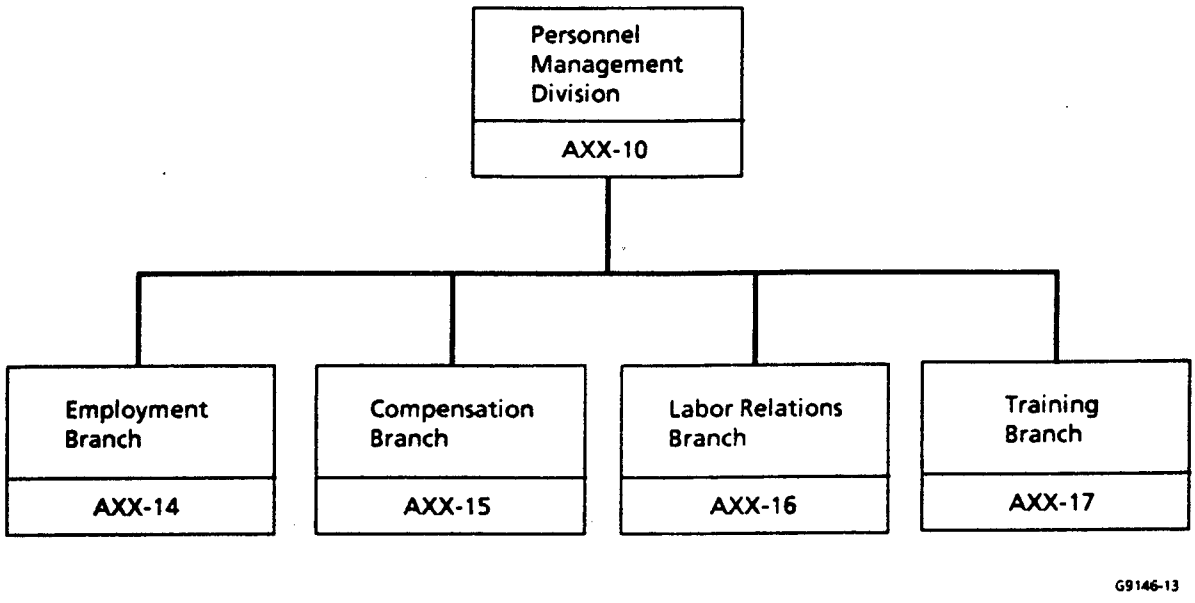


Figure 4-11, Regional Personnel Management Division.

4.3.3.1 Training Branch, AXX-17

The Training Branch coordinates with the Programs Divisions in carrying out the following training functions:

1) Implementing personnel and training policies established at the national headquarters level;

2) Identifying the need for and establishing and implementing regional personnel and training policies designed to meet the particular needs of regional management and other employees;

3) Reviewing and evaluating, on a region-wide basis and across organizational lines, all phases of the personnel and training activities and personnel management to determine their overall effectiveness and to strengthen any area of personnel management in which weaknesses are detected;

4) Performing all operational services for training management, including any management, general, or technical training.

The primary interfaces between the Training Branch and FAA Headquarters are the Airway Facilities and the Air Traffic Training Program Divisions (AHT-400/500) of AHT-1, AAT-14 for AT training, and ASM-210 for AF training.

4.4 FIELD ACTIVITIES

This section describes how the various FAA field facilities accomplish all requisite NAS Plan training for assigned personnel.

Facility personnel interact and communicate with the Region to identify and gain: quota assignments at the FAA Academy or contractor training locations; required training support (including equipment and personnel); and general planning information needed to implement the NAS Plan.

4.4.1 Air Traffic Facilities

The Assistant Manager for Training (AMT) is responsible to the Assistant Air Traffic Manager for accomplishing Air Traffic training. The AMT position is either a full-time assignment or a collateral assignment, depending on the volume of air traffic handled at the facility.

4.4.1.1 Air Route Traffic Control Center (ARTCC)

Since September 1986, all ARTCCs employ contractor training and automation personnel. The contractor training staff, managed by and accountable to the AMT, provides the majority of generic training for the developmental-phase Air Traffic Control Specialist (ATCS). After Screen and Placement at the FAA Academy and subsequent transfer to the ARTCC, the developmental controller is given background academic instruction in lecture form and over-the-shoulder training on dynamic simulators (DYSIMs).

As a collateral duty, the Full Performance Level Air Traffic Control Specialists generally serve as over-the-shoulder OJT instructors for both developmental and fellow FPL controllers.

4.4.1.2 Terminal Radar Approach Control (TRACON) and Tower

As depicted in Figure 4-12, TRACON/Tower Organization, the AMT manages and accomplishes Air Traffic training through the use of the assigned FAA training specialists. The training specialist positions may be full-time or collateral assignments depending on

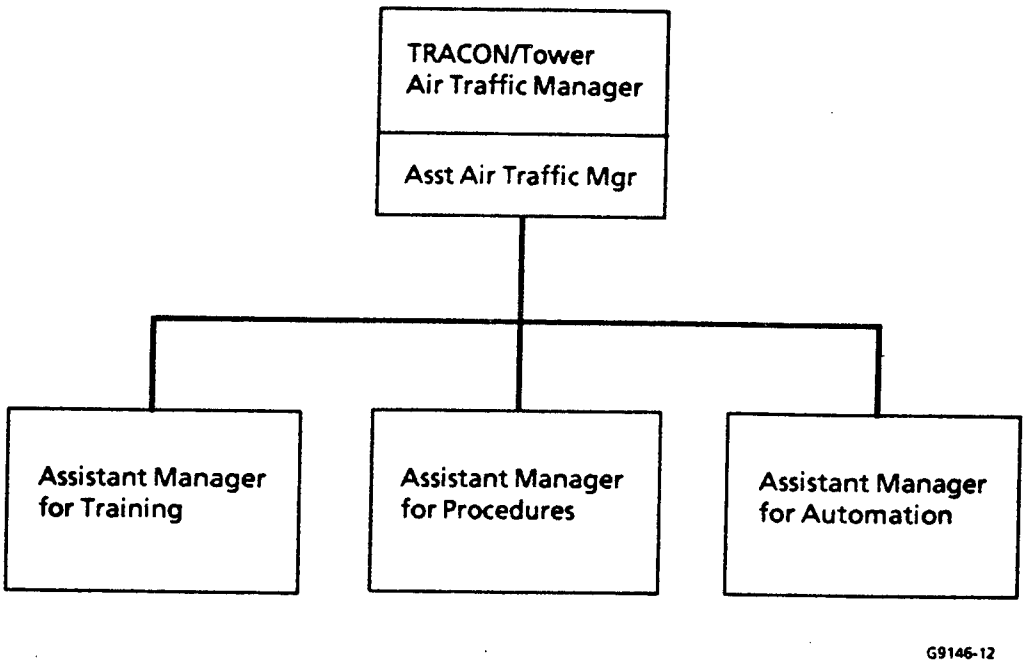


Figure 4-12, TRACON/Tower Organization

facility size, staffing, and site policy. Also, they may or may not be current FPLs. The training specialists, managed by and accountable to the AMT, provide the majority of generic, developmental-phase ATCS training. After Screen and Placement at the FAA Academy and transfer to the TRACON/Tower, the developmental controller is given background academic instruction in lecture form and over-the-shoulder training. Certain operational FPLs, who possess good instructor qualities, may serve as over-the-shoulder OJT instructors for both developmental and fellow FPL controllers.

4.4.1.3 Automated Flight Service Station (AFSS)

As depicted in Figure 4-13, Automated Flight Service Station Organization, the AMT manages and accomplishes Air Traffic training through the use of the assigned FAA Quality Assurance/Training Specialists (QATS). The QATS positions may be full-time or collateral assignments depending on facility size, staffing, and site policy. After initial training at the FAA Academy and transfer to the AFSS, the developmental Flight Service

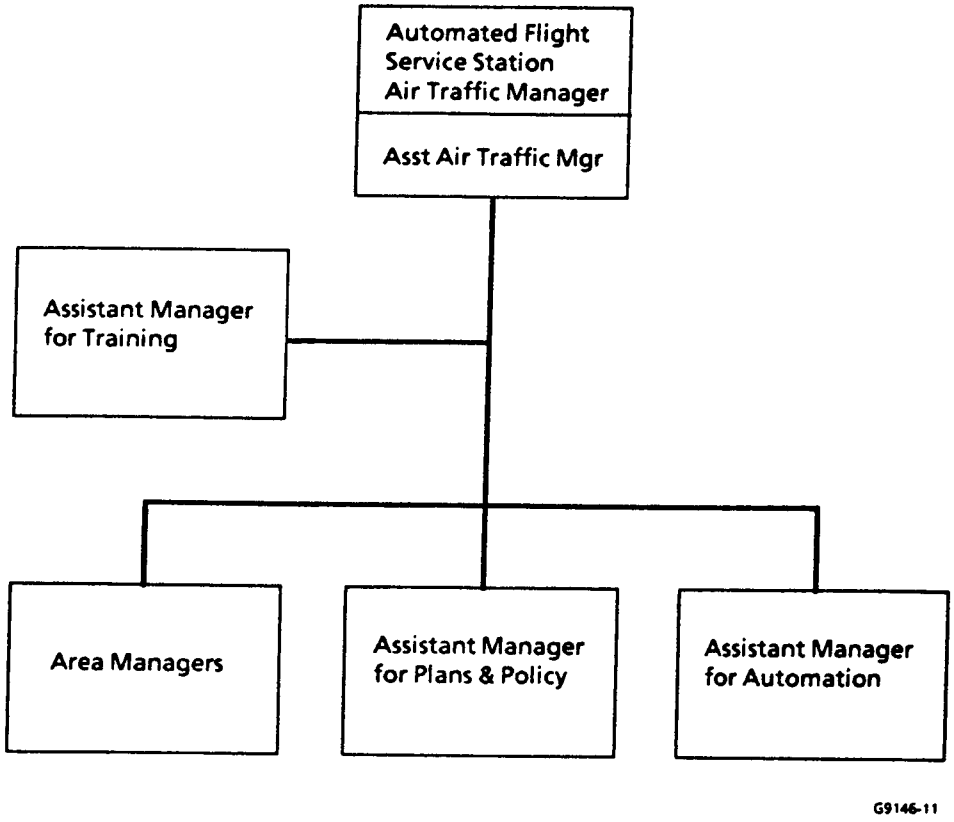


Figure 4-13, Automated Flight Service Station Organization

Specialist is given background academic instruction in lecture form and over-the-shoulder training. Certain operational FPL Specialists, who possess good instructor qualities, may serve as over-the-shoulder OJT instructors for both developmental and fellow FPL Specialists.

4.4.2 Airway Facilities

As depicted in Figure 4-14, ARTCC Airway Facilities Sector (AFS), the Proficiency Development Specialist is responsible to the Program Support Manager for accomplishing Airway Facilities training. Each Sector provides forecasted attrition training needs to the Region for incorporation into the annual Call for Training process. Initial new equipment training needs are not addressed by the Sectors. The two types of Airway Facilities Sectors are described in Sections 4.4.2.1 and 4.4.2.2.

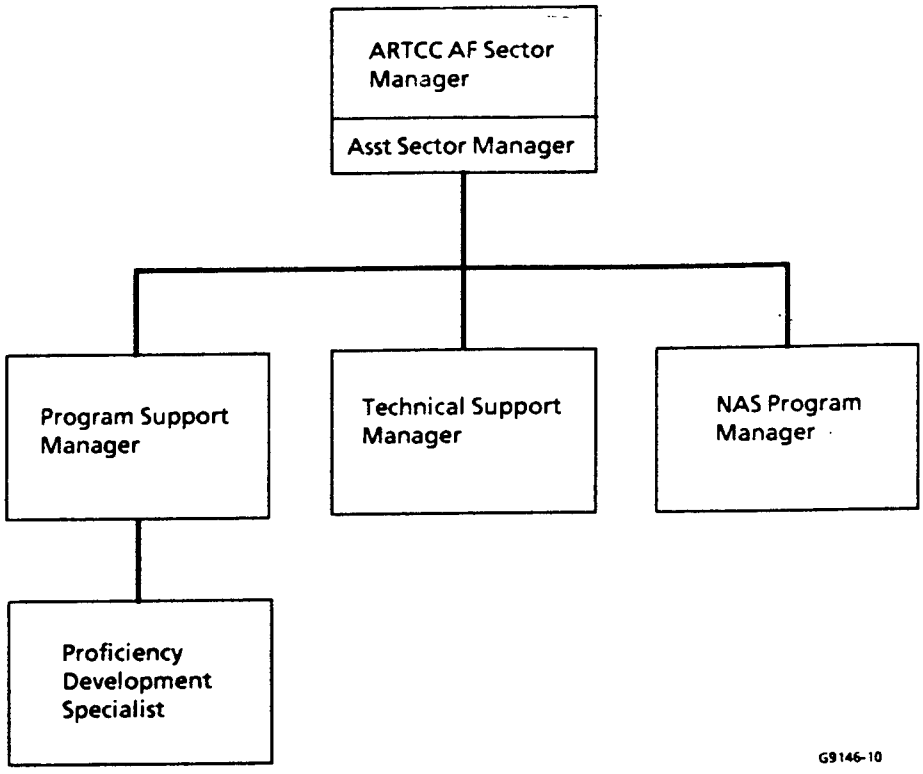


Figure 4-14, ARTCC Airway Facilities Sector

4.4.2.1 ARTCC Airway Facilities Sector

Since the ARTCC AFS personnel maintain only that hardware within the Center, the resident training staff member (Proficiency Development Specialist) identifies the training needed and the

personnel to be trained. The ARTCC AFS Manager then transmits information to the Region and receives quota allocations. The vast majority of AF training is FAA Academy/contractor-resident, while OJT is conducted on-site. Also, CBI and videotape media are employed at the Sector Office. This material is used for training fundamental theories and common principles which are often prerequisite to more specific training.

4.4.2.2 General NAS (GNAS) Airway Facilities Sector

The GNAS AFS, depicted in Figure 4-15, GNAS Airway Facilities Sector, is the administrative conduit (to and from the Region) for its assigned AFS Field Office (AFSFO) personnel. The AFSFO Manager will transmit attrition requirements to the Proficiency Development Specialist (PDS) at the GNAS AFS, who will then incorporate these needs with those of other assigned AFSFOs and forward them to the Region. Regionally-assigned quota is then passed back through the GNAS AFS to the AFSFO and ultimately to

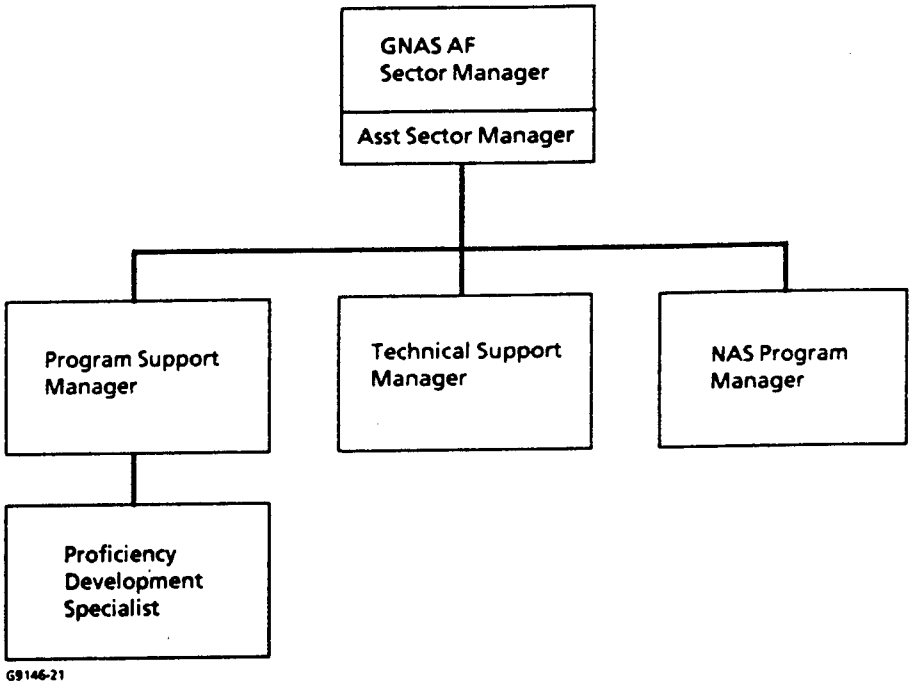


Figure 4-15, GNAS Airway Facilities Sector

the technician who attends the training. The vast majority of AF training is FAA Academy/contractor-resident in lecture/laboratory format, but over-the-shoulder OJT is conducted on-site. As at the ARTCC Sector Field Office (SFO), CBI and videotape media are also employed at the GNAS SFO for training in basic theories and common principles.

4.5 FAA HEADQUARTERS

This section describes how the FAA Headquarters is organized to help accomplish all requisite NAS Plan training.

Headquarters personnel interact and communicate with the Regions to identify and provide: quota assignments at the FAA Academy or contractor training locations; required training support (such as equipment and personnel) and general planning information needed to implement the NAS Plan.

4.5.1 Office of Training and Higher Education

The Office of Training and Higher Education serves as the principal FAA organization responsible for developing policies, programs, standards, systems, and procedures for the following human resource technical training activities: new equipment training, attrition training, training needs assessment, instructional technology, curriculum design, and the research and planning to ensure technological currency and appropriate agency technical training programs.

4.5.1.1 Functional Organization

The functional organization of the Office of Training and Higher Education is shown in Figure 4-16, Office of Training and Higher Education. This office is responsible for all technical training, including new equipment training, training needs assessment, ongoing technical training, individual and occupational development, and instructional technology and curriculum design. This office:

1) Develops and recommends technical training policies, programs, standards, systems, and procedures to meet FAA program requirements, applicable Federal laws, and Office of Personnel Management and Department of Transportation regulations;

2) Administers technical training programs and policies; advises the Administrator, the Executive Director for Policy, Plans, and Resource Management, the Associate Administrator for Human Resource Management, and other agency officials; and provides technical advice, assistance, and guidance to other FAA organizations;

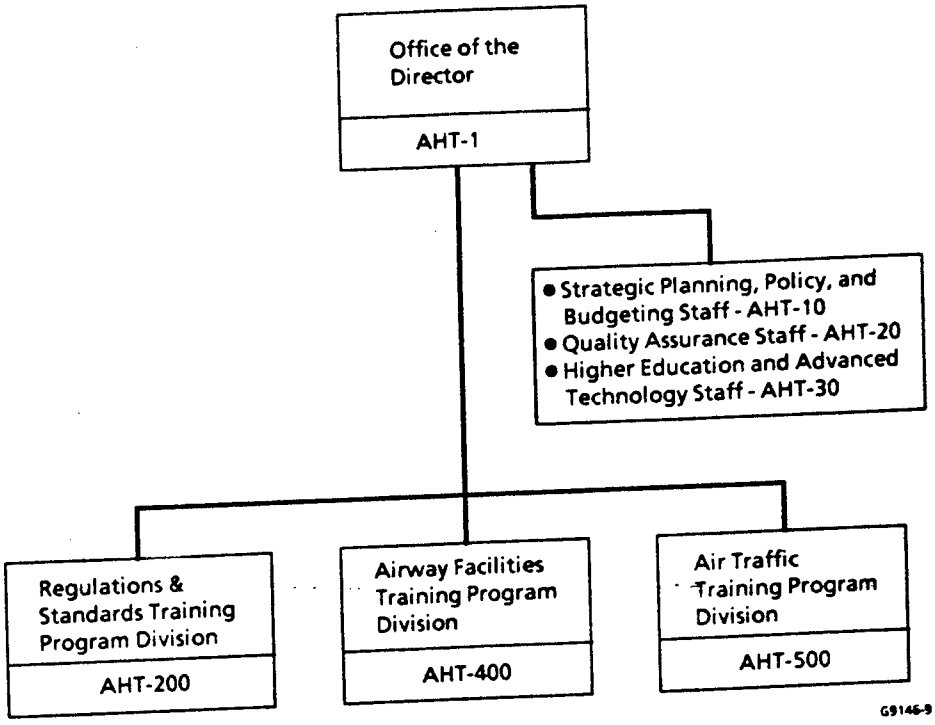


Figure 4-16, Office of Training and Higher Education

3) Represents the FAA on matters within its purview, with the Office of the Secretary of Transportation and with other agencies as required;

4) Provides for the effective evaluation of the individual technical training programs and ensures that measures are taken to correct deficiencies;

5) Provides up-to-date training methodology and state-of-the-art training technology to produce the highest possible quality training programs; and,

6) Develops, operates, and maintains a state-of-the-art Management Information System (MIS) for managing training programs;

The Director of Training and Higher Education is delegated authority to:

1) Waive reimbursement for costs of technical training in accordance with agency policies, directives, and training agreements to continue in service;

2) Waive limitations on use of non-Government training in technical areas in accordance with agency policies and directives; and,

3) Approve requests for out-of-agency training that requires non-routine foreign travel in accordance with agency policies and directives.

4.5.1.2 Office of the Director (AHT-1)

Under the executive direction of the Associate Administrator for Human Resource Management (AHR-1), the Office of the Director (AHT-1):

1) Advises and assists the Administrator, the Executive Director for Policy, Plans, and Resource Management, the Associate Administrator for Human Resource Management, and other FAA executives in providing support for the justification of budget estimates, in the administration of executive decisions, and in maintaining productive relationships with the agency workforce, the Department, the public, and other agencies;

2) Assures that the technical training programs meet statutory and regulatory requirements;

3) Provides for the adequacy, administration, and coordination of technical training programs, standards, systems, and procedures;

4) Is responsible for keeping FAA training on the cutting edge of training technology;

5) Is responsible for integrating FAA and internal university and corporate innovations and developments to provide the highest possible quality training experience for all FAA employees; and,

6) Provides leadership and direction in the planning, management, and control of office activities.

4.5.1.3 Strategic Planning, Policy, and Budget Staff (AHT-10)

The Strategic Planning, Policy, and Budget Staff (AHT-10) is responsible for developing strategic plans, policies and standards for technical training; standards for contract training; reviewing and consolidating the national budget for submission to the Office of the Associate Administrator for Human Resource Management; and developing and controlling the Office of Training and Higher Education expenditure plan.

The staff:

1) Represents the office on strategic plans, policy, standards, budgeting, training management information systems, and administrative support matters within the FAA, the Department, other government agencies, and non-governmental organizations;

2) Develops and maintains technical training policies and standards;

3) Develops and monitors the intermediate and long-term strategic plans for the agency's technical training and higher education programs, consistent with overall agency strategic plans;

4) Develops and maintains standards, systems, and procedures for the formulation, execution, and management of technical training programs and budgets; and,

5) Develops policies, standards, systems, and procedures for national technical training management information systems.

4.5.1.4 Quality Assurance Staff (AHT-20)

When staffed in 1990, the Quality Assurance Staff (AHT-20) will serve as the principal quality assurance organization for the Office of Training and Higher Education.

The staff:

1) Will develop and execute a quality assurance program for the office, initiating action with appropriate divisions to assure that identified deficiencies are corrected; and,

2) Will monitor the management of training resources, initiating action with appropriate divisions to assure that identified deficiencies are corrected.

4.5.1.5 Higher Education and Advanced Technology Staff (AHT-30)

The Higher Education and Advanced Technology Staff (AHT-30) is responsible for planning, developing, and administering programs with institutions of higher education and establishing a consortium with higher education, industry, and government to facilitate cooperation and development of state-of-the-art technical training technology for the aviation professions.

The staff:

1) Represents the office on aviation-related technical training programs with higher education and advanced technology and industry relations within the FAA, the Department, other government agencies, and non-governmental organizations.

2) Administers the Airway Science Curriculum and Grant Program;

3) Monitors industry training and collegiate education programs and recommends selected innovative proposals for application in FAA technical training. Assists in the development of private sector aviation-related educational programs as adjuncts to traditional FAA technical training for entry-level employees; and,

4.5.1.6 Regulations and Standards Training Program Division (AHT-200)

The Regulations and Standards Training Program Division (AHT-200) directs technical training programs; instructional strategies; approves curricula; conforms to standards for quality assurance; performs research and planning to ensure technological currency of technical training activities for Aviation Standards, Regulation and Certification, Civil Aviation Security, Flight Standards, Rulemaking, Aviation Medicine, Accident Investigation, Logistics and Airports.

The division:

1) Serves as the central point of contact for technical training requirements. Analyzes, refines, and identifies resource requirements for initial and recurrent training identified by the service or other FAA entity;

2) Represents the office on Regulations and Standards technical training matters and provides assistance, guidance, and advice to all elements within the FAA, the Department, other government agencies, and non-governmental organizations;

3) Forecasts future technical training needs, technological advances, and trends to maintain state-of-the-art technical training programs;

4) Collaborates with the FAA Academy to monitor technical training activities and identify requirements for new or revised course development;

5) Applies agency standards and ensures the use of task analyses as a basis for technical training development. Coordinates the service technical content review and administers the course approval process;

6) Administers the annual student and course development/revision technical training program;

7) Provides staff support for technical training management information systems; and,

8) Monitors technical training activities; identifies problems and takes corrective action to ensure programs meet field requirements as defined by the services.

4.5.1.7 Airway Facilities Training Program Division (AHT-400)

The Airway Facilities Training Program Division (AHT-400): directs technical training programs; instructional strategies; approves curricula; conforms to standards for quality assurance; and performs research and planning to ensure technological currency of Airway Facilities personnel.

The division:

1) Serves as the central point of contact for technical training requirements. Analyzes, refines, and identifies resource requirements for initial and recurrent training identified by the service or other FAA entity. Serves as the focal point for the office to ensure that all operating services' new equipment technical training requirements are met;

2) Represents the office on Airway Facilities technical training matters and provides assistance, guidance, and advice to all elements within the FAA, the Department, other government agencies, and non-governmental organizations;

3) Forecasts future technical training needs, technological advances, and trends to maintain state-of-the-art technical training programs. Coordinates the NAS and human resource plans with agency human resource management programs;

4) Collaborates with the FAA Academy to monitor technical training activities and identify requirements for new or revised course development;

5) Applies agency standards and ensures the use of task analyses as a basis for technical training development. Coordinates the service technical content review and administers the course approval process;

6) Administers the annual student and course development/revision technical training program;

7) Provides staff support for technical training management information systems; and,

8) Monitors technical training activities, identifies problems, and takes corrective action to ensure that programs meet field requirements as defined by the service.

4.5.1.8 Air Traffic Training Program Division (AHT-500)

The Air Traffic Training Program Division (AHT-500): directs technical training programs and instructional strategies; approves curricula; conforms to standards for quality assurance; and performs research and planning to ensure technological currency of Air Traffic personnel.

The division:

1) Serves as the central point of contact for technical training requirements. Analyzes, refines, and identifies resource requirements for initial and recurrent training identified by the service or other FAA entity. Collaborates with the Airway Facilities Training Program Division to assure that Air Traffic new equipment technical training requirements are met;

2) Represents the office on Air Traffic technical training matters and provides assistance, guidance, and advice to all elements within the FAA, the Department, other government agencies, and non-governmental organizations;

3) Forecasts future technical training needs, technological advances, and trends to maintain state-of-the-art technical training programs. Coordinates the NAS and human resource plans with agency human resource management programs;

4) Collaborates with the FAA Academy to monitor technical training activities and identify requirements for new or revised course development;

5) Applies agency standards and ensures the use of task analyses as a basis for technical training development. Coordinates the service technical content review and administers the course approval process;

6) Administers the annual student and course development and revision technical training program;

7) Provides staff support for technical training management information systems; and,

8) Monitors technical training activities; identifies problems and takes corrective action to ensure that programs meet field requirements as defined by the service.

4.5.2 Air Traffic Training Requirements and Certification Branch (AAT-14)

As depicted in Figure 4-17, Air Traffic Service, the AT Training Requirements and Certification Branch (AAT-14), an executive staff activity of the Associate Administrator for Air Traffic, is responsible for identifying service NAS training requirements. These requirements either originate within AAT-14 or are identified elsewhere in the Air Traffic Service and forwarded to them. AAT-14 personnel validate the requirements and interact with AHT-500 to ensure their fulfillment.

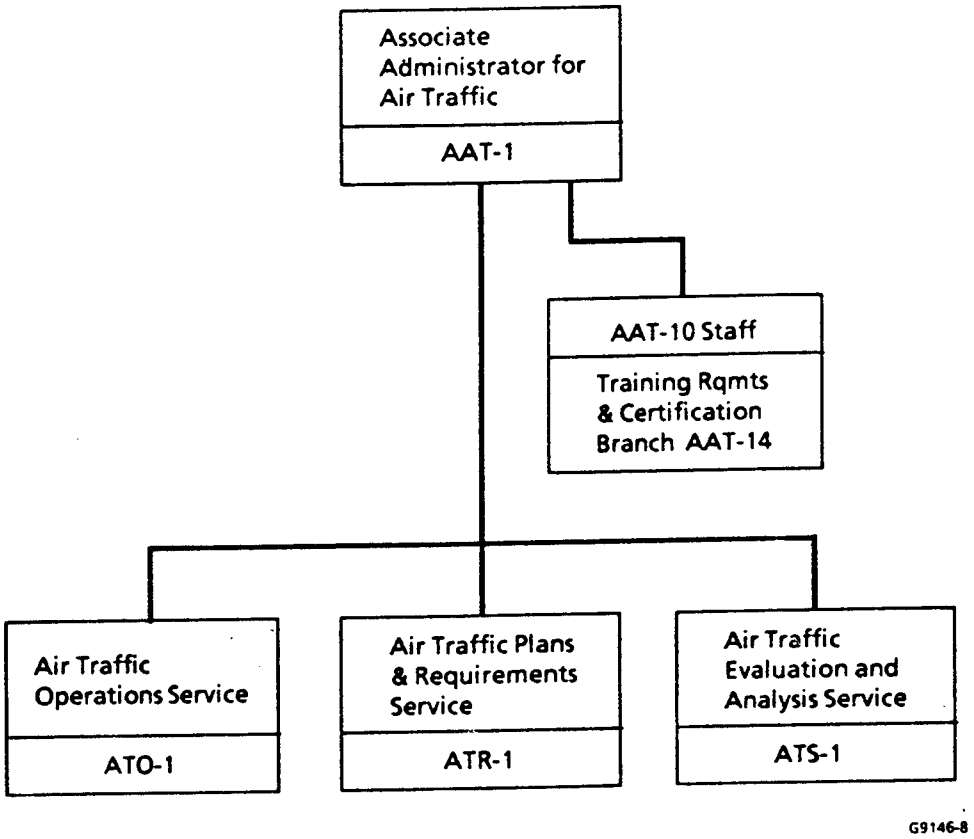


Figure 4-17, Air Traffic Service

4.5.3 Airway Facilities Workforce Requirements Branch (ASM-210)

As depicted in Figure 4-18, Systems Maintenance Service, the AF Workforce Requirements Branch (ASM-210) of the Maintenance Operations Division is responsible for identifying service NAS training requirements. These requirements either originate within ASM-210 or are identified elsewhere in the Airway Facilities Service and forwarded to them. ASM-210 personnel validate the requirements and interact with AHT-400 to ensure their fulfillment.

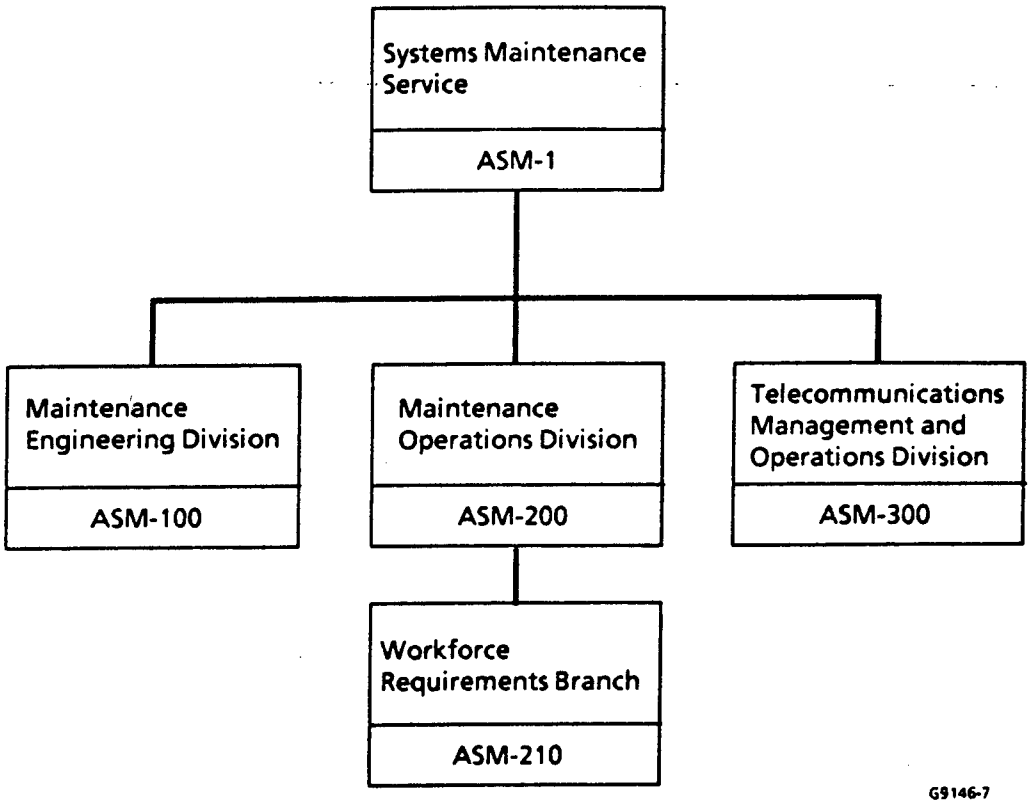


Figure 4-18, Systems Maintenance Service

4.6 TRAINING PROCESS

The previously-described training organizations interact with each other and with agency elements external to training, as depicted in Figure 4-19, FAA Technical Training Structure.

As a necessary first step, a requirement for training should be identified. These requirements can be identified at any FAA organizational level. For NAS Plan projects, the determination of the requirement for training begins with a system (equipment) specification.

The specification, prepared and distributed by the Program Manager, is reviewed by the Services (AAT-14 for Air Traffic and ASM-210 for Airway Facilities), the Regional Offices, and the FAA Academy. Based on review comments, a need for training may be established.

In any event, the procurement of new equipment will necessitate training for those Airway Facilities personnel who will maintain and certify the system. If training is deemed necessary, ASM-210 and AAT-14 will prepare and forward Training Proposals (TPs) to AHT.

Based on these proposals, AHT will notify the Program Manager that training is required. Working with the appropriate Service, AHT then develops the training input for the Statement of Work (SOW) for inclusion in the Request For Proposal (RFP). It is at this point that broad training objectives (generally taken from the Training Proposal), training development standards and their appropriate DIDs, student population and course conduct information, and points of contact (e.g., Training COTRs) are identified. AHT personnel develop and forward a training Procurement Request for inclusion in the RFP.

The RFP is then distributed to interested contractors, who submit their proposals to the Acquisition and Contracting Branch (ALG-300). A contract award selection process, to choose the optimal proposal, occurs and the system contract is awarded.

Once the contract is finalized, the various training organizations continue their involvement, to varied degrees, to ensure that the training development and delivery is sufficient to satisfy the requirement. The FAA Academy Training COTR, for example, reviews all contract deliverables to ensure their completeness and accuracy. AHT, through communication with the Services, interacts with the Regions to provide well-planned quota assignments. The field facility training personnel interact with the Region to acquire all prerequisite training and new system training for their personnel.

FAA Technical Training Management Structure

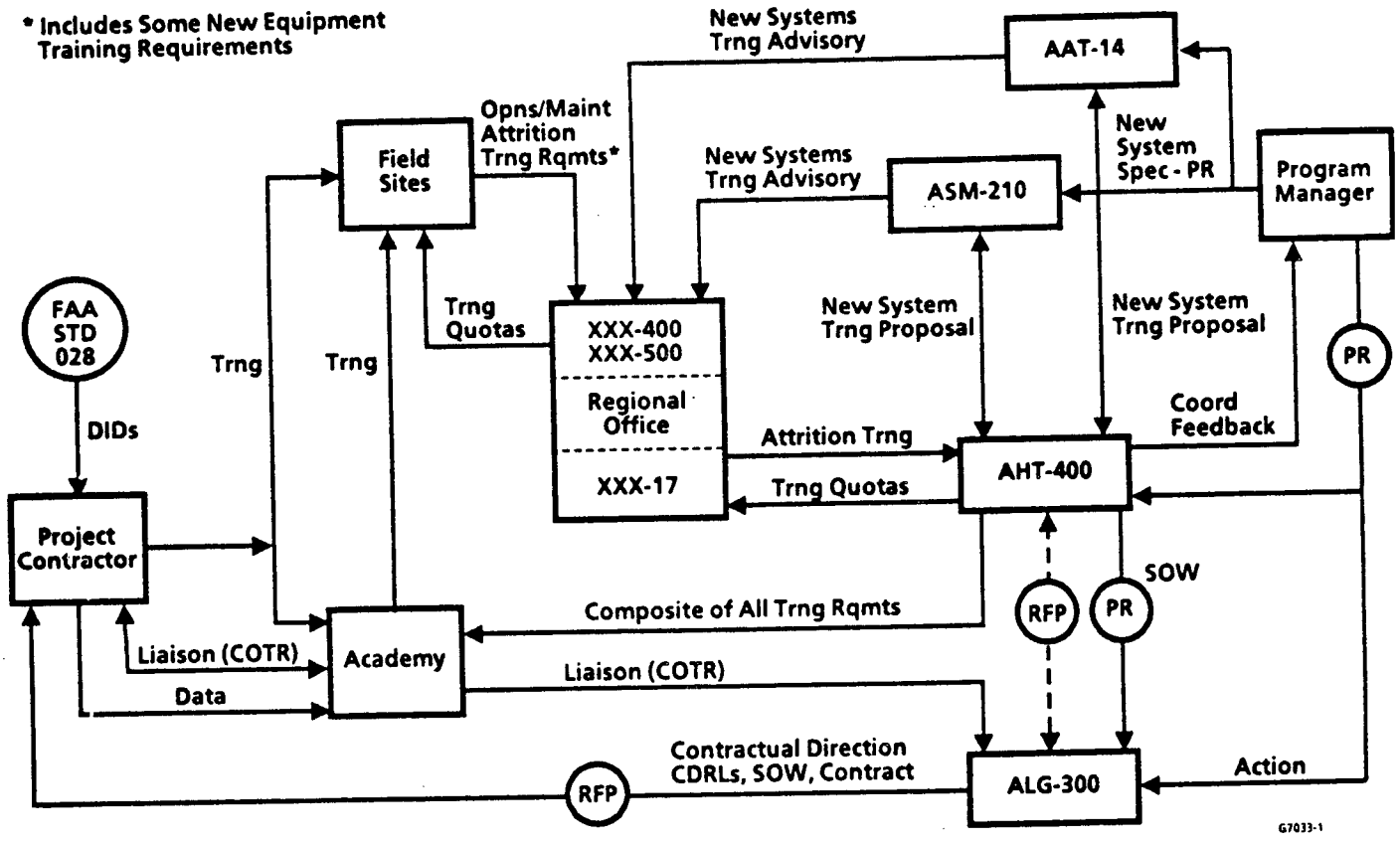


Figure 4-19, FAA Technical Training Structure

5 PROJECTED NAS PLAN TRAINING

5.1 OVERVIEW

During the next five years approximately 50 additional NAS systems will be installed at NAS sites. To maintain and operate these new systems safely and efficiently, it will be necessary for more than 60,000 AF and AT training instances. Careful planning must occur to allow for timely training prior to equipment installation.

This chapter provides an overview of the projected NAS subsystems and the information systems available to plan for training (See Figure 5-1, Elements of NAS Plan Training). The critical milestones for training and equipment delivery, as described in Section 5.2, allow Headquarters and field personnel to view a "snap shot" of the upcoming NAS subsystems. Further details about each subsystem are provided in Section 5.3. To effectively plan

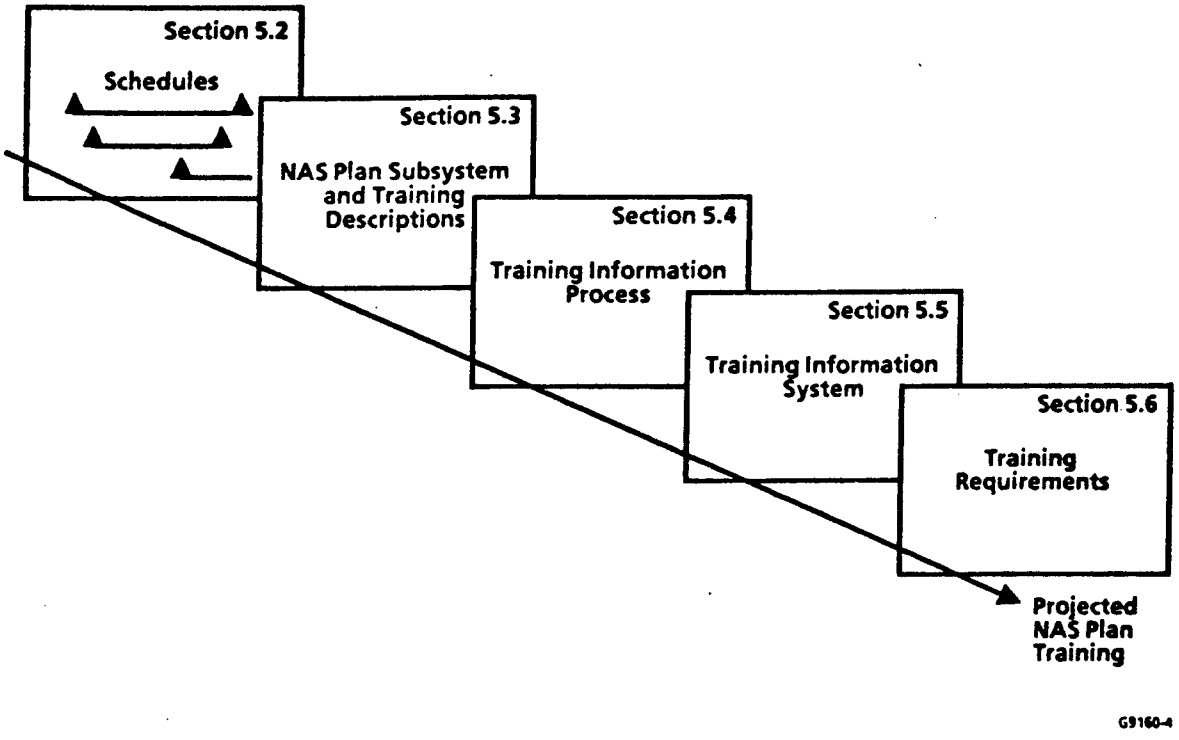


Figure 5-1, Elements of NAS Plan Training

training for AF and AT personnel, a Training Information Process (TIP) was established. Section 5.4 explains how the two components of the TIP, STPs and the TDB work together to form the baseline for training development and delivery and provide a feedback loop between members of the training community. Tracking the status of each training project is also essential for successful NAS Plan implementation. The Training Information System (TIS), created to track ongoing NAS projects, is discussed in Section 5.5. This system, when fully operational, will provide an overview of the data available to training managers.

Modernizing the NAS with these subsystems requires a coordinated effort. The philosophy and future trends discussed in Chapter 2 are sometimes reflected in the type of training provided for these subsystems. In other cases, changes in philosophy have not yet affected the training system. The Orders and Standards in Chapter 3 provide the policy and guidance for subsystem acquisition and their associated training. The TIP and TIS provide data the organizations identified in Chapter 4 can use to plan and schedule training for the new subsystems. Chapter 6 describes the training initiatives in the Flight Plan for Training. These initiatives will be used to implement effective training for the NAS Plan projects described here. Chapter 7 of this document presents a view of the future through 1994 and assesses the impact of projected changes on NAS Plan training.

5.2 SCHEDULES AND CRITICAL MILESTONES

An overview of the training to be delivered for NAS Plan projects is provided in Table 5-1, NAS Plan Training Delivery and First Site Equipment Delivery Schedules. The first site installation is indicated by 'O' and the time which training delivery spans is indicated by the lines. It should be noted that these times are approximate, and represent data available for December 1989. The changes in program schedules will necessitate changes to this table, and this information is presented here for PLANNING PURPOSES ONLY. Although these dates are subject to changes in the overall program schedules, the magnitude of the training effort is evident.

All NAS Plan projects having training in FY-90 through FY-94 are listed in Table 5-1 and described in this chapter. The projects have been organized alphabetically. For more detailed information on the number of students to be trained by project, see Table 5-2, Air Traffic NAS Plan Training - Students by Project by Year, and Table 5-3, Airway Facilities NAS Plan Training - Students by Project by Year at the end of this chapter.

TABLE 5 - 1. NAS PLAN TRAINING DELIVERY AND FIRST SITE EQUIPMENT DELIVERY SCHEDULES

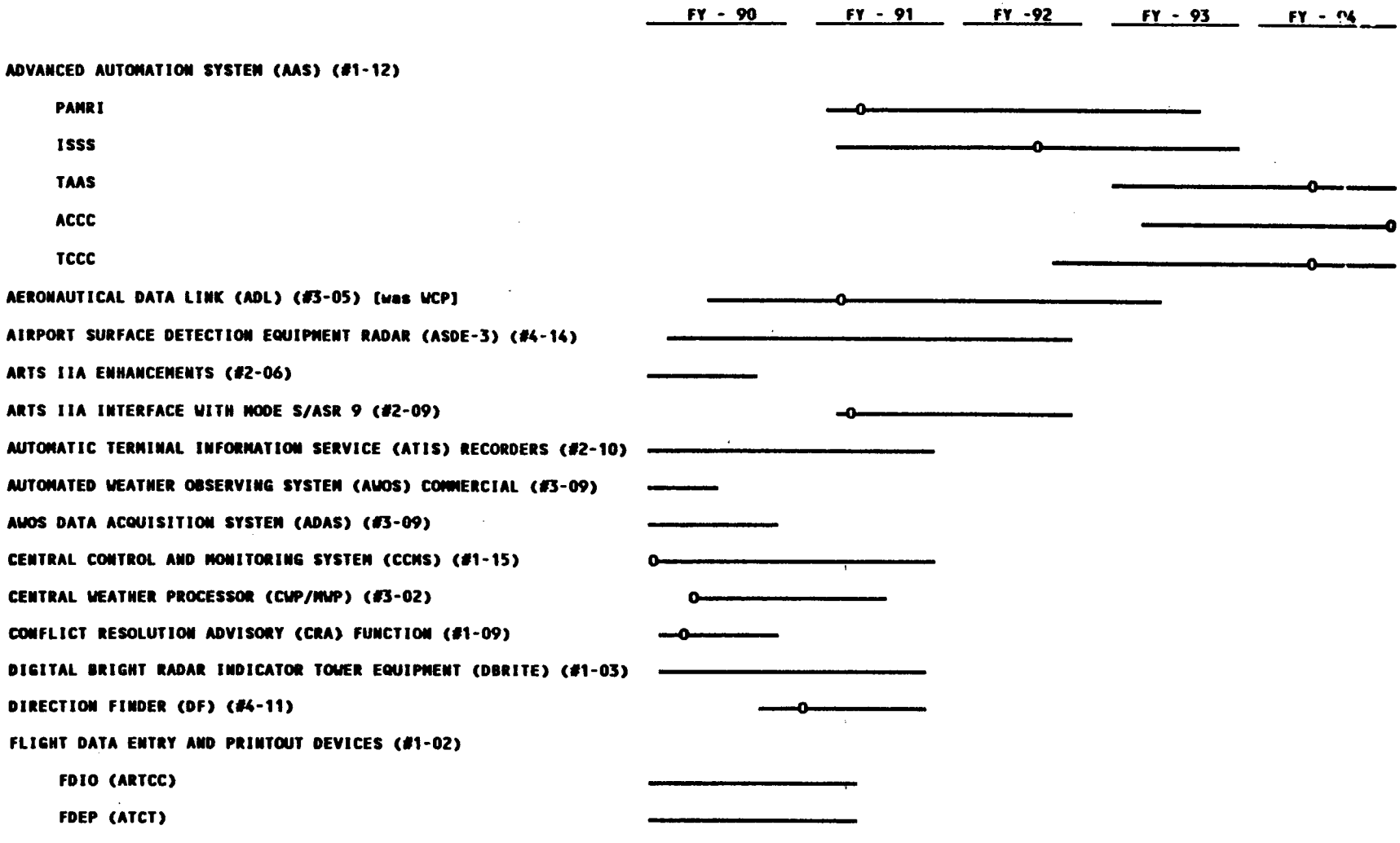


TABLE 5 - 1. NAS PLAN TRAINING DELIVERY AND FIRST SITE EQUIPMENT DELIVERY SCHEDULES (CONT'D)

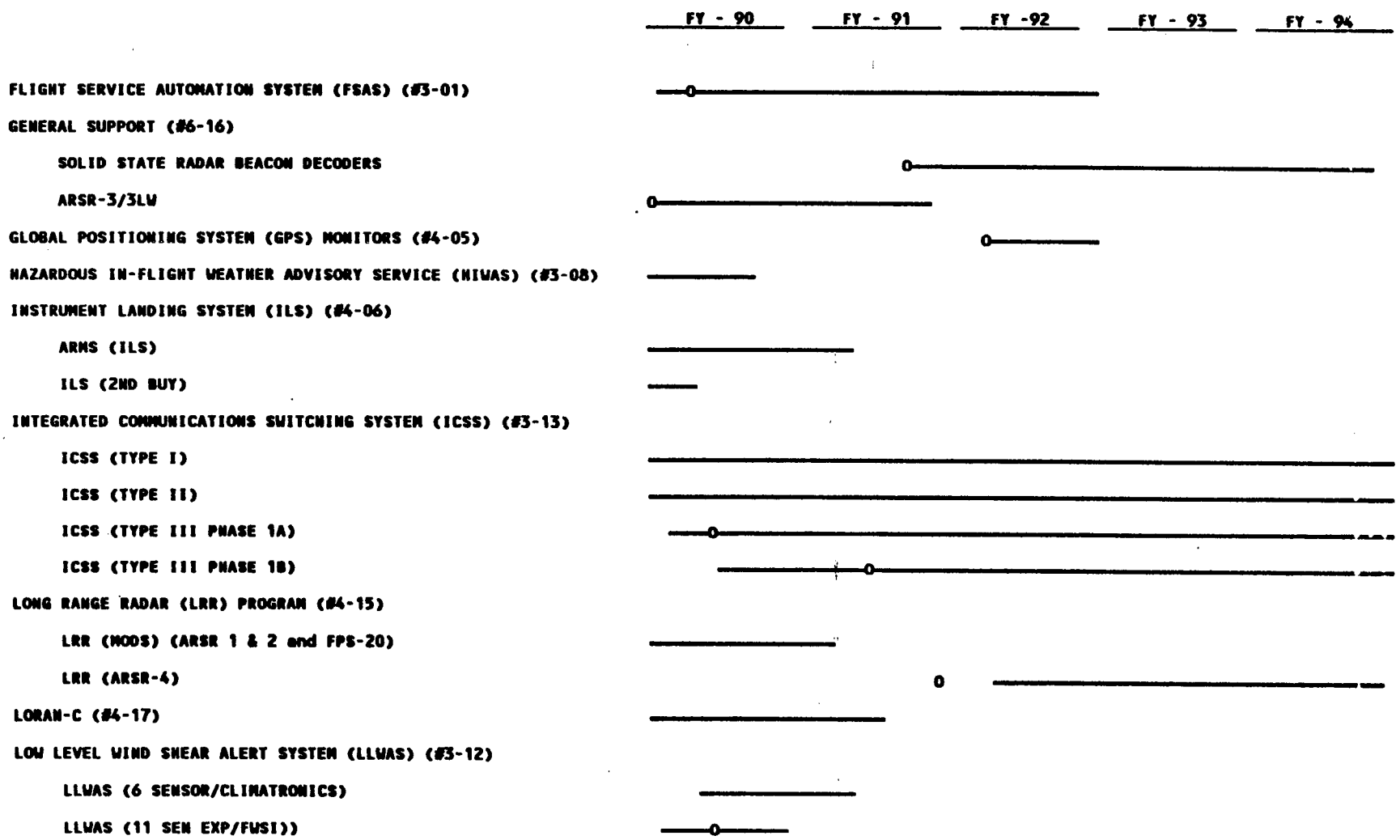


TABLE 5 - 1. NAS PLAN TRAINING DELIVERY AND FIRST SITE EQUIPMENT DELIVERY SCHEDULES (CONT'D)

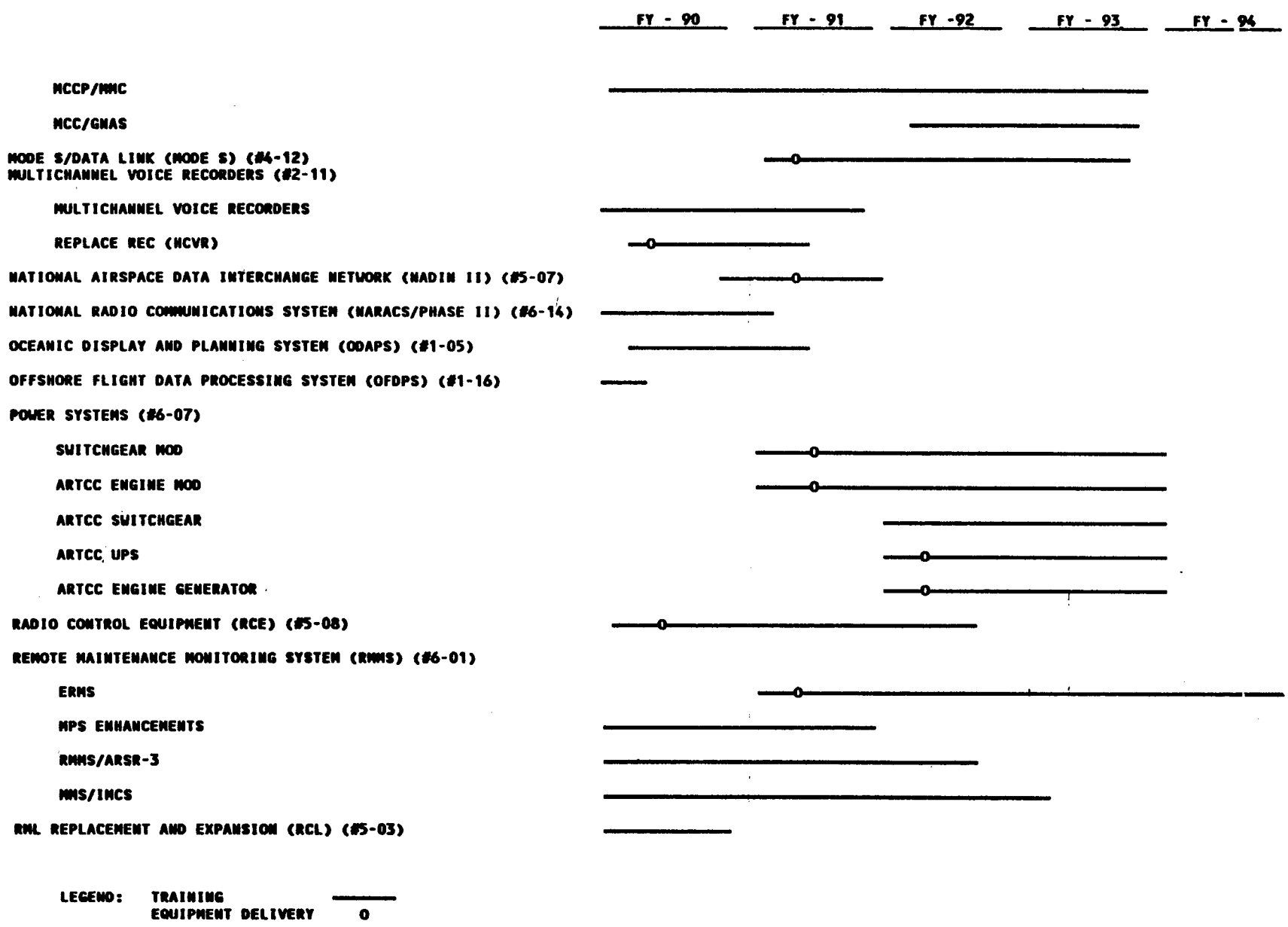
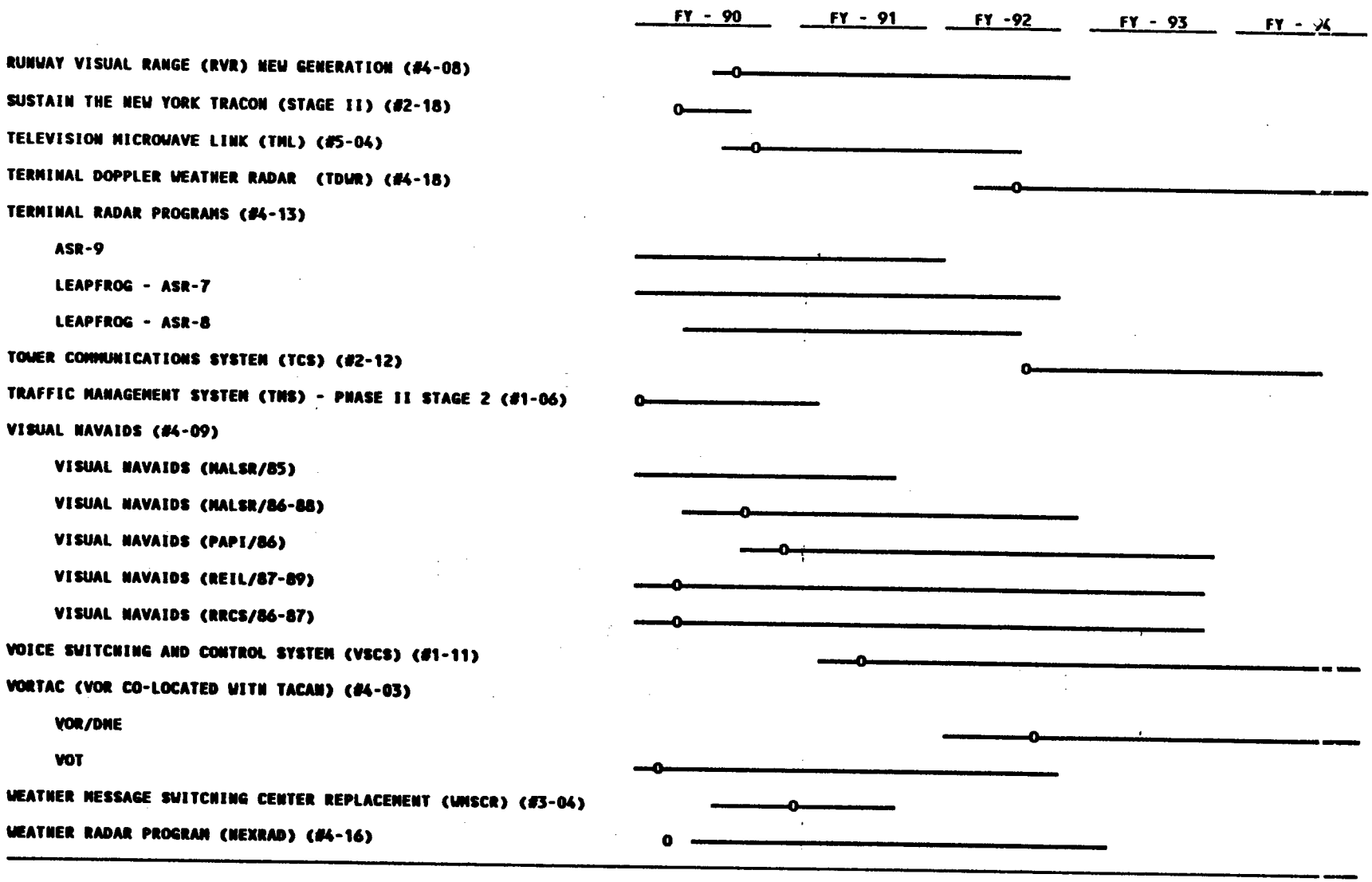


TABLE 5 - 1. NAS PLAN TRAINING DELIVERY AND FIRST SITE EQUIPMENT DELIVERY SCHEDULES (CONT'D)



LEGEND: TRAINING ——— EQUIPMENT DELIVERY O

5.3 NAS PLAN SUBSYSTEM AND TRAINING DESCRIPTIONS

The following subsections describe each Brown Book project that requires training in FY-90-FY-94. Please note that some of the projects have multiple training activities.

5.3.1 ADVANCED AUTOMATION SYSTEM (AAS) (#1-12)

The AAS program is divided into five phases of implementation: the Peripheral Adaptor Module Replacement Item (PAMRI) segment, the Initial Sector Suite System (ISSS) segment, the Terminal Advanced Automation System (TAAS) segment, the Tower Control Computer Complex (TCCC) segment, and the Area Control Computer Complex (ACCC) segment. Training for each is discussed in the following sections.

5.3.1.1 PAMRI

PAMRI will replace the input/output capabilities of the existing PAMs, the Data Receiver Group (DRG), and the Radar Multiplexor (RMUX). It will provide increased interface capabilities with external facilities/radars, in HOST/Plan View Display (PVD) to Common Console transitions, and replace aging equipment. PAMRI will be delivered to 20 Continental United States (CONUS) ARTCCs, to the FAA Academy as a training system, and to the FAATC in a field support configuration.

> Training for AF and AT will be lecture/lab covering hardware and software maintenance and computer operator and systems engineer functions.
>
> AF Training: 20 courses varying between 14 and 103 hours each.
>
> AT Training: 1 automation course, 13.5 hours each.

5.3.1.2 ISSS

ISSS (Figure 5-2) replaces all current controller situation displays and interface equipment. It provides the controller with early operational use of the AAS common consoles prior to deployment of the full AAS configuration. The ISSS will be delivered to 20 CONUS ARTCCs, to the FAA Academy as a training system, and at the FAATC in a field support configuration.

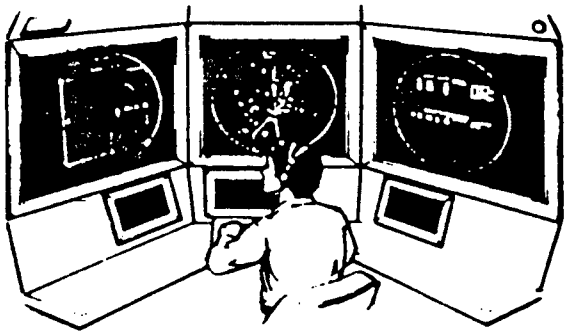


Figure 5-2, Initial Sector Suite System

Training for AF is anticipated to be lecture/lab at the FAA Academy covering hardware and software maintenance, computer operator, and systems engineer functions.

Training for AT is anticipated to be lecture/simulation on-site using the Detached Console Trainer (DCT) and DYSIM, covering the computer-human-interface (CHI) for the new common console. Training for AT software personnel will be lecture/lab at the FAA Technical Center and the FAA Academy.

AF Training: 20 courses ranging from 20 to 380 hours each.

AT Training: 10 courses ranging from 8 to 55 hours each for CHI training, plus 125 hours for software maintenance.

5.3.1.3 TAAS

The TAAS phase of implementation is the initial ACCC step that will establish terminal radar functions in the ARTCC environment. TAAS will replace terminal ARTS equipment and will utilize new high-capacity ACCC automation equipment. This phase will include installation of additional common consoles and Local Communication Network (LCN) equipment designed under the ISSS phase, input/output equipment, processors, and terminal software required to initiate the system as a terminal system only. The TAAS system will be delivered to 20 CONUS ARTCCs, at the FAA Academy in a training configuration, and at the FAATC in a field support configuration. In addition, the TAAS may also be established at the New York TRACON, the Anchorage ARTCC and the Honolulu ARTCC.

Training for AF is anticipated to be lecture/lab at the FAA Academy and will include hardware and software maintenance training. Training for AT software maintenance will also be lecture/lab at the FAA Technical Center and the FAA Academy.

AF Training: To Be Determined (TBD).

AT Training: TBD.

5.3.1.4 ACCC

The ACCC phase is the logical conclusion of the TAAS and ISSS installation and implementation activities. Common consoles, LCN, certain PAMRI hardware, and selected software used by the ISSS will be integrated with the TAAS processors, common consoles, I/O equipment and LCN. TAAS software will be integrated with the en route software delivered with the ACCC system. ACCC implementation will occur at 20 CONUS ARTCCs, at the FAA Academy in a training configuration, and at the FAATC in a field support configuration. In addition, the system may be delivered to New York TRACON, the Anchorage ARTCC and the Honolulu ARTCC.

Training for AF is anticipated to be lecture/lab at the FAA Academy and will include hardware and software maintenance. AT software training will also be lecture/lab at the FAA Technical Center and the FAA Academy. AT controller training will be conducted on-site at each ARTCC.

AF Training: TBD

AT Training: TBD

5.3.1.5 TCCC

The TCCC phase will provide an automated tower cab information system. It presents local environmental and airport system status data to the controllers on new tower position consoles and provides control over local systems related to air traffic control. TCCC equipment may be installed in up to 260 towers, at the FAA Academy in a training configuration, and at the FAATC in a field support configuration.

AF Training: TBD

AT Training: TBD

5.3.2 AERONAUTICAL DATA LINK (ADL) (#3-05) [was Weather Communications Processor (WCP)]

One element of ADL is the Data Link Processor (DLP). The DLP will provide Mode-S specific communications processing, message routing between applications processors and Mode-S sensors, and weather applications processing and associated end-to-end communications functions.

Training will consist of a program to support maintenance and operational/configuration training.

AF Training: Two courses. Two maintenance classes, approximately 88 hours each and two operational/configuration classes, approximately 48 hours each.

AT Training: N/A.

5.3.3 AIRPORT SURFACE DETECTION EQUIPMENT RADAR (ASDE-3) (#4-14)

Provides for replacement and establishment of airport surface detection equipment facilities which provide radar surveillance of aircraft and vehicle traffic operating on the airport surface.

Training for AF will be lecture/lab covering hardware maintenance and software familiarization necessary for system maintenance. AT training will be lecture/lab covering system operation.

AF Training: 1 course, 240 hours

AT Training: 1 course, approximately 8 hours

5.3.4 ARTS IIA ENHANCEMENTS (#2-06)

Upgrades hardware and software to provide beacon tracking, conflict alert, minimum safe altitude warning, and a training target generator. (See Figure 5-3, ARTS IIA Equipment.)

Training is lecture/lab covering hardware and software maintenance.

AF Training: 4 courses: 3 hardware, 80-600 hours, 1 software, 200 hours.

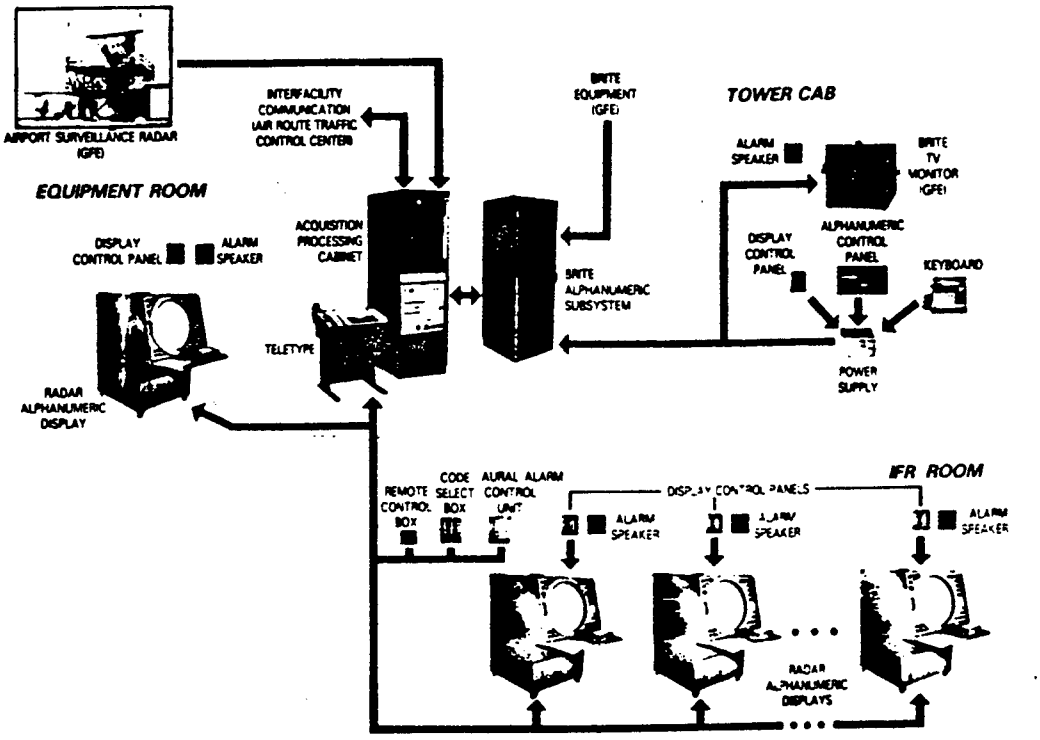


Figure 5-3, ARTS IIA Equipment

AT Training: 1 ATCS cadre training course, 40 hours. Course for trainers and supervisors was completed 3/88. AT Automation Specialist (AUS) training completed in 3/88. Course 53021 ARTS IIA for AUS is on-going.

5.3.5 ARTS IIA INTERFACE WITH MODE S/ASR 9 (#2-09)

Provides hardware and software to allow ARTS IIAs to operate with Mode S/ASR 9.

Training will be added to existing ARTS IIA hardware course.

AF Training: 8 hours self-study material will be provided to previously-trained ARTS IIA technicians.

AT Training: Briefing guide for ATCS.

5.3.6 AUTOMATIC TERMINAL INFORMATION SERVICE (ATIS) RECORDERS (#2-10)

Replaces automatic terminal information service recorders used at ATCTs to transmit local weather and airport conditions to pilots.

Training will be lecture/lab cadre training at the FAA Academy for OJT Administrators for hardware maintenance (1 course, 28 hours).

AF Training: on-site OJT.

AT Training: on-site briefing.

5.3.7 AUTOMATED WEATHER OBSERVING SYSTEM (AWOS) COMMERCIAL (#3-09)

The Automated Weather Observing System collects weather data through automated sensors, processes the data, and provides it to pilots via computer-synthesized voice.

Training is anticipated to be lecture/lab covering maintenance procedures.

AF Training: 2 courses; 32 hour course to qualify technicians to certify the AWOS and 80 hour full AWOS maintenance course.

AT Training: N/A

5.3.8 AWOS DATA ACQUISITION SYSTEM (ADAS) (#3-09)

ADAS functions as a message concentrator, collecting weather messages from the AWOSs and National Weather Service (NWS) Automated Surface Observing Systems (ASOSs) for internal distribution within the ACF and national distribution via Weather Message Switching Center Replacement (WMSCR) to the NWS. One ADAS is located in each of the 23 ACFs and can communicate with a maximum of 137 AWOS sites.

Training is anticipated to be lecture/lab covering hardware and software maintenance.

AF Training: 2 courses; (approximately) 120 hours hardware, 160 hours software.

AT Training: N/A

5.3.9 CENTRAL CONTROL AND MONITORING SYSTEM (CCMS) (#1-15)

The Area Control Facilities (ACF) project consolidates en route and terminal functions into a common ACF. Phase I, which CCMS is a part of, prepares the ARTCCs and New York TRACON sites, and Phase II relocates/consolidates TRACONs into ACFs.

Training is lecture/lab covering hardware and software maintenance.

AF Training: 1 course, 40 hours for hardware maintenance.

AT Training: N/A

5.3.10 CENTRAL WEATHER PROCESSOR/METEROLOGICAL WEATHER PROCESSOR (CWP/MWP) (#3-02)

The Central Weather Processor project will improve the collection and dissemination of accurate real-time weather information to pilots, controllers, meteorologists, and Flight Service Station specialists. CWP will consist of two independent subsystems (MWP and Real-Time Weather Processor (RWP)). There will be 23 MWP systems installed: one at each of 21 ARTCCs and two at the Central Flow Control Facility (CFCF). There will be 25 RWP Production systems installed: one at each of the 23 ARTCCs, one at the FAATC, and one at the FAAAC.

Training consists of NWS meteorologist instruction at each installation facility, limited AF training at each facility, and an AT System User's Guide for Traffic Management Unit Supervisors, Area Supervisors, and Central Flow Control Facility Managers.

AF Training: AF technicians will attend designated modules, applicable to AF requirements, during the two day NWS meteorologist/AF Personnel course at each site.

AT Training: System User's Guide

5.3.11 COMPUTER BASED INSTRUCTION (CBI) (#6-02)

The Computer Based Instruction project provides developmental training in Air Traffic, Airway Facility and field locations. This project will expand the present program by adding new CBI terminals in the field and updating older CBI terminals. The new CBI hardware and software will be purchased as part of the Office Automation and Technology Services (OATS) contract.

This is an equipment only purchase to support training. Training will be scheduled for equipment users.

5.3.12 CONFLICT RESOLUTION ADVISORY (CRA) FUNCTION (#1-09)

The Conflict Resolution Advisory function is designed to automatically provide the en route radar controller with a display of alternative conflict resolutions.

Training is anticipated to consist of software maintenance training and a briefing for controllers.

AF Training: 1 course: software maintenance, hours TBD.

AT Training: Controller Briefing

5.3.13 DATA LINK PROCESSOR (DLP). See Aeronautical Data Link (ADL) (#3-05)

5.3.14 DIGITAL BRIGHT RADAR INDICATOR TOWER EQUIPMENT (DBRITE) (#2-16)

Replaces/establishes bright radar indicator tower equipment used to provide display of traffic data in tower cabs. Procures television microwave links (TMLs) to provide service to satellite towers (formerly project 5-04, TML). (See Figure 5-4, DBRITE System.)

Training is lecture/lab, covering hardware maintenance.

AF Training: 1 course, 80 hours

AT Training: 1 course conducted on-site; 4-66 hours depending on site capability.

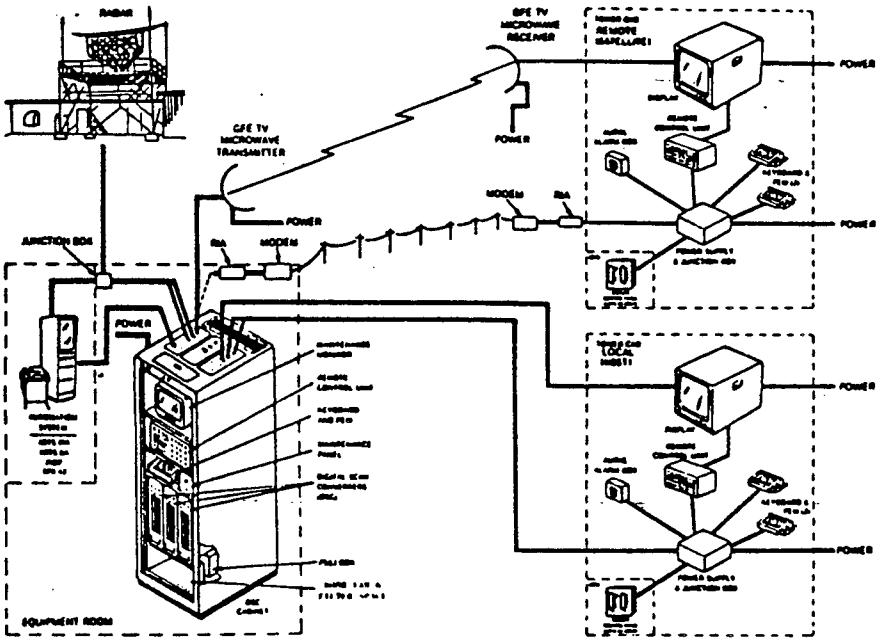


Figure 5-4, DBRITE System

5.3.15 DIRECTION FINDER (DF) (#4-11)

Direction Finders are used to locate aircraft by homing on their VHF transmissions. This project upgrades DF systems with solid-state equipment and establishes sites for additional coverage. The very high frequency (VHF)/DF equipment is operated from full-time Flight Service Stations.

Training for AF will be lecture/lab covering the antenna and the FSS displays site equipment. Air Traffic training will be conducted by site training specialists using training materials developed by the FAA Academy.

AF Training: 1 course, 80 hours

AT Training: 1 on-site course, 48 hours (estimated)

5.3.16 FLIGHT DATA ENTRY AND PRINTOUT DEVICES (#1-02)

The Flight Data Input/Output (FDIO) project replaced the existing Flight Strip Printers (FSPs) at the ARTCCs, the Flight Data Entry and Printout (FDEP) systems at the Air Traffic Control Towers (ATCTs), and the established FDIOs at additional airport locations.

5.3.16.1 FDIO (ARTCC)

Training consists of lecture/lab and a briefing.

AF Training: 1 course, 40 hours maintenance training.

AT Training: on-site briefing covering an overview of FDIO equipment.

5.3.16.2 FDEP (ATCT)

Training consists of lecture/lab and a briefing.

AF Training: 1 course, 40 hours maintenance training.

AT Training: on-site briefing covering an overview of FDEP equipment.

5.3.17 FLIGHT SERVICE AUTOMATION SYSTEM (FSAS) (#3-01)

The Flight Service Automation System will improve user access to weather information and automate flight plan filing. This project establishes 23 new Automated Flight Service Stations (AFSSs) and 8 new Flight Service Data Processing Systems (FSDPSs).

Training is anticipated to be lecture/ lab.

AF Training: 2 courses: 40 hours, for AWP hardware maintenance; 40 hours for FSDPS hardware maintenance.

AT Training: 1 course, 400 hours for software maintenance.

5.3.18 GENERAL SUPPORT (#6-16)

Provides capability to accomplish ongoing and nonrecurring projects not covered under specific NAS Plan projects. These projects improve operations, provide additional capabilities and promote safety.

5.3.18.1 SOLID STATE RADAR BEACON DECODERS

This equipment will replace existing tube-type decoders at 101 ARTS-III and En route ARTS (EARTS) facilities.

AF Training: Training is to be 80 hours lecture/lab for hardware site maintenance and a 40 hour course for two depot technicians.

AT Training: Formal training should not be required.

5.3.18.2 AIR ROUTE SURVEILLANCE RADAR-3 WITH THREE LEVEL WEATHER (ARSR-3/3LW)

The 3LW aids in identifying precipitation areas in the en route control environment. The radars provide precipitation intensity data to ARTCCs in the form of narrowband (digital) information related through communication links to ARTCC data receiver groups.

Training is lecture/lab covering hardware maintenance.

AF Training: 1 course, 520 hours for hardware maintenance.

AT Training: N/A

5.3.19 GLOBAL POSITIONING SYSTEM (GPS) MONITOR (#4-05)

The GPS project will serve as a supplemental system for navigation and as an approach aid. This project provides monitoring of GPS operation and alerts pilots and controllers of GPS status.

Training will be lecture/lab covering each major component of the system.

AF Training: 1 course, 40 hours for hardware maintenance.

AT Training: TBD.

5.3.20 HAZARDOUS IN-FLIGHT WEATHER ADVISORY SERVICE (HIWAS) (#3-08)

The Hazardous In-flight Weather Advisory Service at CONUS AFSSs will provide continuous prerecorded weather advisories to pilots over selected VORs.

Training will be lecture/lab cadre training at the FAA Academy for OJT Administrators for hardware maintenance (1 course, 28 hours).

AF Training: on-site OJT.

AT Training: on-site briefing.

5.3.21 INSTRUMENT LANDING SYSTEM (ILS) (#4-06)

The Instrument Landing System provides horizontal and vertical guidance for precision approaches. This project establishes ILS and provides for replacement of ILS components and systems.

5.3.21.1 AIRPORT REMOTE MONITORING SYSTEM (ARMS) (ILS)

Training is lecture/lab covering hardware maintenance.

AF Training: 1 course, 80 hours, for hardware maintenance.

AT Training: N/A

5.3.21.2 ILS (2ND BUY)

Training will be lecture/lab covering hardware maintenance.

AF Training: 1 course: 80 hours, hardware maintenance

AT Training: N/A

5.3.22 INTEGRATED COMMUNICATIONS SWITCHING SYSTEM (ICSS) (#3-13)

Integrated Communications Switching System provides voice and communications switching system for ATCTs, TRACONs, and AFSSs.

5.3.22.1 ICSS (TYPE I) (SMALL TOWERS AND TRACONS)

Training is lecture/lab covering hardware and software maintenance.

AF Training: 1 course, 80 hours, conducted at the FAA Academy.

AT Training: 1 course, 8 hours (cadre) training on-site.

5.3.22.2 ICSS (TYPE II) (LARGER TOWERS AND TRACONS)

Training is lecture/lab covering hardware and software maintenance training.

AF Training: 1 course, 80 hours, conducted by the FAA Academy temporarily until September 1989.

AT Training: 2 courses: controller 8 hours, supervisors/automation course is 16 hours, conducted on-site (cadre) by the contractor

5.3.22.3 ICSS (TYPE III PHASE 1A) (REMAINING AFSS AND FSDPS)

Training is anticipated to be lecture/lab covering hardware and software maintenance training.

AF Training: 1 course, approximately 120 hours

AT Training: 2 courses: controller course is 40 hours, supervisors/automation specialists 32 hours (cadre), contractor conducts on-site training

5.3.22.4 ICSS (TYPE III PHASE 1B) (TRACON/CAB, ATCTS AND NEW ATCTS)

Training is anticipated to be lecture/lab covering hardware and software maintenance training.

AF Training: Anticipated site maintenance will begin FY-93; 2 courses approximately 80 hours hardware and 40 hours software maintenance training.

AT Training: 2 courses: approximately 8 hours for controller training; 16 hours for supervisor/automation specialist (cadre), contractor conducted on-site training.

5.3.23 LONG RANGE RADAR (LRR) PROGRAM (#4-15)

The Solid State Receiver/Digital Moving Target Indicator (SSR/DMTI) modification is designed to upgrade selected Air Route Surveillance Radar (ARSR) en route radar systems. The kits will be installed in 40 ARSR-1 and -2 locations and in 23 selected FPS-20 sites and one ARSR-60 site. The ARSR-4 project is to procure a three-dimensional, all solid state, unattended surveillance radar to replace the existing joint-use search and height-finder radars (ARSR -1, -2, -3; AN/FPS 20/60).

5.3.23.1 LRR (MODS) (ARSR 1 & 2 and FPS-20)

Training will be lecture/lab covering hardware maintenance.

AF Training: 1 course: 56 hours, for hardware maintenance.

AT Training: N/A

5.3.23.2 LRR (ARSR-4)

Training will be lecture/lab covering hardware, software and maintenance control.

AF Training: 3 courses: hardware maintenance 320 hours; software maintenance 480 hours; and maintenance control 80 hours.

AT Training: Developed by the FAA Academy, 6-9 hour briefing.

5.3.24 LONG RANGE NAVIGATION (LORAN-C) (#4-17)

LORAN-C is a supplemental navigation system providing area navigation capability. This project provides new LORAN-C stations to fill in the mid-continent coverage gap; it also provides monitors to be used to gather data which will provide correction values for nonprecision approaches.

Training will be lecture/lab covering hardware maintenance and systems overview for controllers.

AF Training: 1 course, 40 hours for hardware maintenance training.

AT Training: On-site briefing, using a comprehensive videotape

5.3.25 LOW LEVEL WIND SHEAR ALERT SYSTEM (LLWAS) (#3-12)

LLWAS to be installed at 110 airports provides local controller with information on hazardous winds that create unsafe conditions for aircraft during the approach, landing, takeoff, and departure phases of flight. This program has two phases: (1) a "6 Sensor Improvement" (also known as Phase II) and (2) an "11 Sensor Expansion" (also known as Phase III or Expanded LLWAS). Contractors are Climatronics and Fairchild Weston Systems, Inc.

5.3.25.1 LLWAS (6 SENSOR/CLIMATRONICS)

Training is anticipated to be lecture/lab covering hardware maintenance.

AF Training: 1 course: 40 hours, for hardware maintenance.

AT Training: Briefing Notes

5.3.25.2 LLWAS (11 SEN EXP/FWSI)

Training is anticipated to be lecture/lab covering hardware maintenance and briefing notes for the controllers.

AF Training: 1 course: 40 hours, for hardware maintenance.

AT Training: Briefing notes

5.3.26 MAINTENANCE CONTROL CENTER (MCC) (#6-04)

Maintenance control centers will be located at all ARTCC/ACF locations and General National Airspace Sector (GNAS) offices, and they will function as the focal points for remote maintenance monitoring and operations support.

5.3.26.1 MCCP/MMC

Training will be lecture/lab for users and hardware/software maintainers.

AF Training: 3 courses: User's course, 80 hours; hardware maintenance course, 120 hours; software maintenance course, 200 hours.

AT Training: N/A

5.3.26.2 MCC/GNAS

Training will be lecture/lab for users and hardware/software maintainers.

AF Training: TBD.

AT Training: N/A

5.3.27 MODE S/DATA LINK (MODE S) (#4-12)

This project will improve the surveillance capability of the Air Traffic control radar beacon system. Accuracy will be improved, interference effects will be greatly reduced, selective addressing will be provided, and an air to ground (A/G) data link will be available. Systems will be delivered to 137 sites (both terminal and en route) via the first procurement, with an additional 60 from the second buy.

Training will be contractor-developed [joint venture of Westinghouse and UNISYS] lecture/lab initially delivered at the contractor's facility and the FAA Technical Center.

AF Training: 4 courses: 240 hours Sensor Maintenance; 160 hours of OJT at the Tech Center; 40 hours Overview; and a 160-hour Program Support Facility (PSF) Hardware Maintenance course.

AT Training: 1 course, 800 hours Software Maintenance.

5.3.28 MULTICHANNEL VOICE RECORDERS (10/20 CHANNEL RECORDERS/ADDITIONAL) (#2-11)

Replaces multichannel voice recorders used to record pilot and controller communications. (See Figure 5-5, Multichannel Voice Recorder.)

5.3.28.1 MULTICHANNEL VOICE RECORDER

Training will be lecture/lab covering hardware maintenance.

AF Training: 1 course, 40 hours

AT Training: on-site briefing

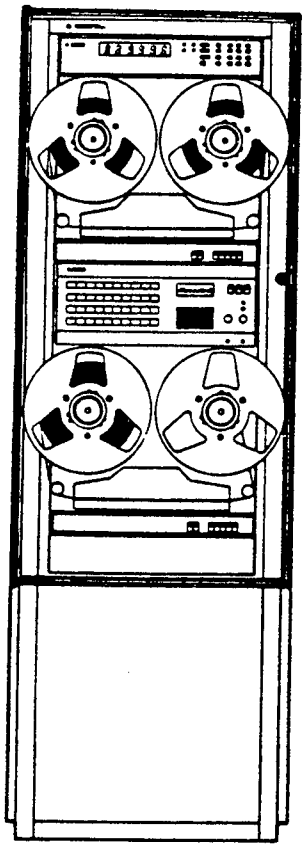


Figure 5-5, Multichannel Voice Recorder

5.3.28.2 REPLACE REC HIGH CAPACITY VOICE RECORDER (HCVR)

Training for the HCVR is anticipated to be lecture/lab covering hardware maintenance.

AF Training: 2 courses: 1 contractor-conducted course and 1 FAA Academy course, 40 hours each.

AT Training: on-site briefing

5.3.29 NATIONAL AIRSPACE DATA INTERCHANGE NETWORK (NADIN II) (#5-07)

This effort will interconnect with NADIN IA and provide the interfaces and capacity necessary to meet the additional data switching and throughput requirements of the NAS Plan.

Training will be lecture/lab/correspondence covering hardware and software maintenance.

AF Training: 7 courses: Packet Switching Network (PSN) hardware maintenance 80 hours, Network Control Center (NCC) hardware maintenance 40 hours, NCC operations 80 hours, PSN software maintenance 120 hours, PSN system architecture 24 hours, PSN overview 120 hours and PSN NCO orientation 4 hours. All hours estimated.

AT Training: N/A

5.3.30 NATIONAL RADIO COMMUNICATIONS SYSTEM (NARACS-PHASE II) (#6-14)

Establishes a High Frequency (HF)/SSB radio communications voice and data capability between FAA Headquarters, regions, field facilities, support aircraft, and other federal, state and local government agencies. Provides the minimum essential communications capability necessary to direct the management, operation, and reconstitution of the NAS during emergencies when normal common carrier telecommunications are interrupted. (See Figure 5-6, NARACS Single Control Console.)

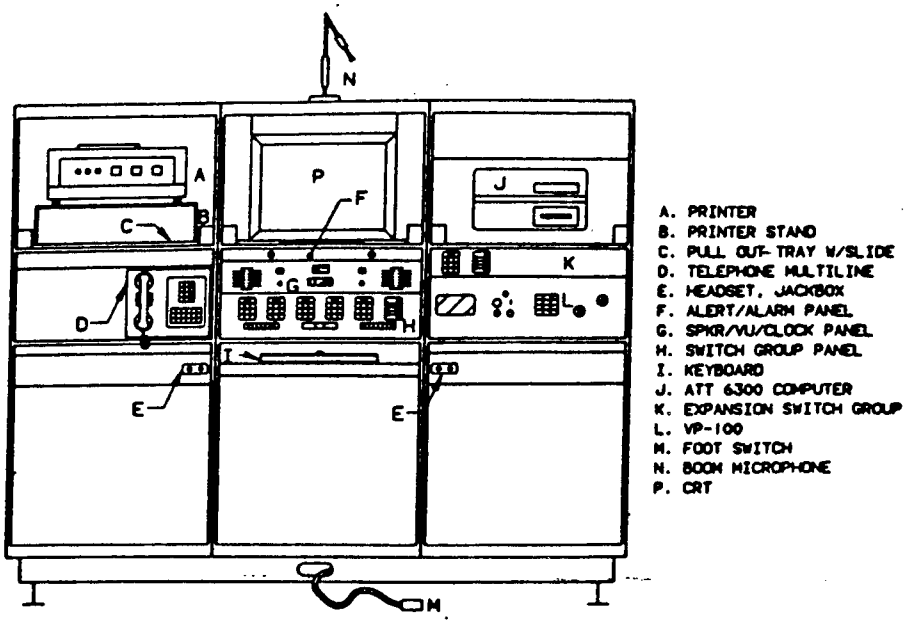


Figure 5-6, NARACS Single Control Console

Training will be via self-instruction courses for AF personnel using a video tape and reference guide provided to each site.

AF Training: Operations training will be 8 hours and hardware maintenance training will be 24 hours.

AT Training: N/A

5.3.31 OCEANIC DISPLAY AND PLANNING SYSTEM (ODAPS) (#1-05)

The Oceanic Display and Planning Systems at New York and Oakland ARTCCs provide automation assistance for oceanic ATC. The system processes flight plan data, provides automated conflict probing, and displays aircraft positions extrapolated from flight plan data.

Training will be lecture/lab and OJT.

AF Training: 2 courses: System Engineer Training will be OJT; Computer Operator Training will be OJT (approximately 40 hours).

AT Training: 2 courses: AT Controller Training will be lecture/lab, 40 hours; Software Maintenance Specialist/Automation Specialist will be lecture/lab, 80 hours.

5.3.32 OFFSHORE FLIGHT DATA PROCESSING SYSTEM (OFDPS) (#1-16)

The Offshore Flight Data Processing System replaces the existing Honolulu compact flight data processing system. The replacement system consists of IBM 4381 processors and peripherals with enhanced functional capabilities including comprehensive flight data processing, NAS data network interfaces, higher reliability and increased capacity.

Training will be lecture/lab and OJT.

AF Training: 2 courses: System Engineer Training will be OJT; Computer Operator Training will be OJT (approximately 40 hours).

AT Training: 1 course: AT Controller Training will be lecture/lab, 40 hours.

5.3.33 POWER SYSTEMS (#6-07)

This project updates/retrofits standby power and power conditioning systems, and established cost effective alternate prime power sources. The Switchgear and Engine MOD projects will modify the existing ARTCC Switchgear and Engine Generators and the Academy training unit to increase both system reliability and power handling capacity. ARTCC Switchgear, UPS, and Engine Installation projects will provide the installation of new power system switchgear, UPS, and Engine Generators at all ARTCCs and the FAA Academy training unit. New equipment will provide the additional power requirements anticipated for long term needs.

5.3.33.1 SWITCHGEAR MOD

Training is lecture/lab and OJT.

AF Training: 1 course, approximately 40 hours.

AT Training: N/A

5.3.33.2 ARTCC ENGINE MOD

Training is lecture/lab and OJT.

AF Training: 1 course, approximately 40 hours.

AT Training: N/A

5.3.33.3 ARTCC SWITCHGEAR

Training is lecture/lab and OJT.

AF Training: 1 course, approximately 40 hours.

AT Training: N/A

5.3.33.4 ARTCC UPS

Training is lecture/lab and OJT.

AF Training: 1 course, approximately 40 hours.

AT Training: N/A

5.3.33.5 ARTCC ENGINE GENERATOR

Training is lecture/lab and OJT.

AF Training: 1 course, approximately 40 hours.

AT Training: N/A

5.3.34 RADIO CONTROL EQUIPMENT (RCE) (#5-08)

New tone and keying radio control equipment will establish an integrated system for remote ground/air voice communications radio control, remote environmental sensor and maintenance monitoring, and emergency backup battery power.

Training is anticipated to be lecture/lab covering AF technician site maintenance task procedures.

AF Training: 1 course, approximately 80 hours.

AT Training: N/A

5.3.35 REMOTE MAINTENANCE MONITORING SYSTEM (RMMS) (#6-01)

The RMMS provides hardware and software for remote monitoring, adjustment, and certification of NAS facilities and systems. Environmental Remote Monitoring Subsystems (ERMs) provides for stand-alone retrofit capability for FAA facility environmental systems. Maintenance Processor Subsystems (MPSs) have been installed at all ARTCC and 10 GNAS sectors to process, store, and route facility data to and from MDTs. Maintenance Management System (MMS)/Interim Monitor and Control Software (IMCS) programs are being provided (to run concurrently with MCS in the PMSs) to permit the use of facility data at sectors, work centers, regional offices, and FAA support organizations.

5.3.35.1 ERMS

Training is expected to be lecture/lab.

AF Training: TBD.

AT Training: N/A

5.3.35.2 MAINTENANCE PROCESSING SYSTEM (MPS) ENHANCEMENTS

Training is via correspondence, Course #44425.

AF Training: 2 courses: 160 hours for hardware maintenance; 160 hours for software maintenance training.

AT Training: N/A

5.3.35.3 MMS/IMCS

Training is lecture/lab.

AF Training: 1 course, 56 hours.

AT Training: N/A

5.3.35.4 RMMS/ARSR-3

Training is lecture/lab covering hardware and software maintenance.

AF Training: 1 course: 80 hours, for hardware and software maintenance.

AT Training: N/A

5.3.36 RADAR MICROWAVE LINK (RML) REPLACEMENT AND EXPANSION (RCL) (#5-03)

This project provides an integrated transmission system by replacing the existing RML system with a modern Radio Communication Link (RCL) forming a network for voice and data with capacity for future ACF requirements.

Training will be lecture/lab covering hardware maintenance.

AF Training: 2 courses: RCL maintenance 120 hours for all AF Technicians; ANMS 32 hours for AF technicians assigned to ARTCCs. THe RCL course is a prerequisite for the Automatic Network Management System (ANMS) course.

AT Training: N/A

5.3.37 RUNWAY VISUAL RANGE (RVR) NEW GENERATION (#4-08)

RVR equipment is used to measure visibility along runways and provides data to determine viability of landings/take-offs. Implementation consists of replacing existing equipment with new equipment and establishing new RVR sites. Unlike transmissometer RVR systems, the new generation RVR system incorporates a single-point visibility sensor. More modular than the existing RVR, this sensor is capable of operating in various configurations at different locations throughout the NAS. (See Figure 5-7, New Generation RVR System.)

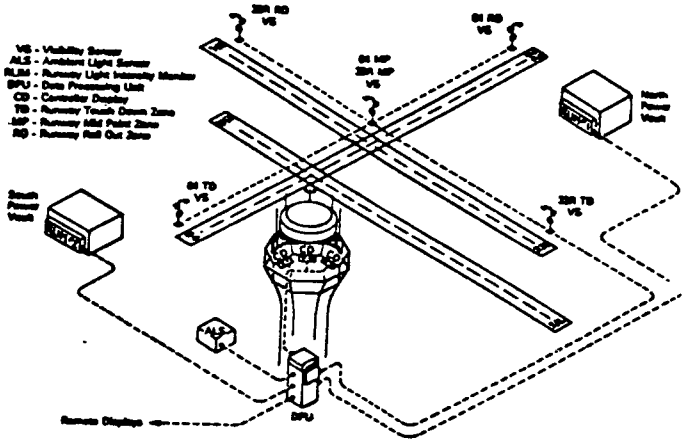


Figure 5-7, New Generation RVR System

Training will be lecture/lab, covering each major component of the system.

AF Training: 1 course, 80 hours.

AT Training: System User's Guide with briefing notes.

5.3.38 SUSTAIN THE NEW YORK TRACON (STAGE II) (#2-18)

Replaces/upgrades existing ARTS IIIA software, displays, and equipment to increase computer capacity and improve reliability to maintain the current operation capability until it is replaced by AAS. Stage II involves developing a final system configuration called ARTS IIIE, with new Solid State Memory (SSM), additional processors, and software functionally reconfigured to provide a distributed system.

Training will be lecture/lab covering hardware and software maintenance.

AF Training: 1 course, 80 hours, covering ARTS IIIE hardware maintenance.

AT Training: 1 course, 96 hours, covering ARTS IIIE software maintenance.

5.3.39 TELEVISION MICROWAVE LINK (TML) (#5-04)

The Television Microwave Link project has been combined with project 2-16, DBRITE. The TML system will provide a microwave path to be used to transmit television signals from the DBRITE system to remote satellite towers.

Training is anticipated to be lecture/lab covering hardware maintenance.

AF Training: 1 course, approximately 24 hours

AT Training: Briefing notes

5.3.40 TERMINAL DOPPLER WEATHER RADAR (TDWR) (#4-18)

Up to 102 Terminal Doppler Weather Radars will be installed at major terminals to provide warnings of hazardous weather conditions.

Training is anticipated to be lecture/lab covering maintenance/operational procedures.

AF Training: 2 courses: 240 hours for maintenance training; 240 hours for software maintenance training.

AT Training: 1 course: 40 hours for the operational training.

5.3.41 TERMINAL RADAR PROGRAMS (#4-13)

Airport Surveillance Radars (ASRs) are used to provide position data on aircraft operating in the terminal area. This project will provide ASR-9 terminal radars to replace ASR-4s, 5s and 6s and establish a minimum number of new facilities. ASR 7s and 8s will be leapfrogged/relocated to provide desired coverage.

5.3.41.1 ASR-9

Digital primary terminal radar (with weather processing capability) to be installed at 105 sites.

Training for both AT and AF exists. Contractor-developed lecture/lab hardware maintenance course. FAA Academy has developed a lecture/lab Controller course.

AF Training: 1 course, 400 hours for hardware maintenance.

AT Training: 1 course, 8 hours for ATCS.

5.3.41.2 LEAPFROG - ASR-7

Training for both AT and AF exists, in lecture/lab format, at the FAA Academy.

AF Training: 1 course, 160 hours for hardware maintenance.

AT Training: 1 course, 16 hours for ATCS.

5.3.41.3 LEAPFROG - ASR-8

Training for both AT and AF exists, in lecture/lab format, at the FAA Academy.

AF Training: 1 course, 240 hours for hardware maintenance.

AT Training: 1 course, 16 hours for ATCS.

5.3.42 TOWER COMMUNICATIONS SYSTEM (TCS) (#2-12)

Provides a voice communication switch and control system that replaces obsolete equipment and installs Tower Communications System equipment at new towers.

Training is anticipated to be lecture/lab covering hardware/software maintenance.

AF Training: 2 courses: approximately 80 hours hardware, 40 hours software.

AT Training: 2 courses: controllers/ supervisors and automation specialists; controllers conducted on-site (cadre), hours TBD.

5.3.43 TRAFFIC MANAGEMENT SYSTEM (TMS) - PHASE II STAGE 2 (#1-06)

Upgrades the present flow control system to a fully integrated Air Traffic management system which will operate at the national level through the Central Flow Control Function (CFCF) at FAA Headquarters and at the local level through traffic management units in each ARTCC/ACF and designated Level V facilities.

Training for Stage II is anticipated to be lecture/lab and consist of: Aircraft Situation Display (ASD) and software operations training.

AF Training: 1 course, Software Operation Training, estimate 40 hours.

AT Training: 2 courses: Controller Training for ASD and Software Operations Training. All hours TBD.

5.3.44 VISUAL NAVAIDS (#4-09)

This group of related projects provides a variety of lighting systems such as Medium-intensity Approach Lighting with Runway alignment indicator lights (MALSR), Runway-End Identification Lights (REIL), Visual Approach Slope Indicator (VASI) or Precision Approach Path Indicator (PAPI), and Omni-Directional Approach Lighting System (ODALS). Also provided are replacement and establishment of remote radio control for the above visual

navigation aids. A separate procurement is made for each fiscal year.

5.3.44.1 VISUAL NAVAIDS (MALSR/85)

Training is lecture/lab covering hardware maintenance.

AF Training: 1 course: 48 hours, for hardware maintenance.

AT Training: N/A

5.3.44.2 VISUAL NAVAIDS (MALSR/86-88)

Training is lecture/lab covering hardware maintenance.

AF Training: 1 course: 48 hours, for hardware maintenance.

AT Training: N/A

5.3.44.3 VISUAL NAVAIDS (PAPI/86)

Training is anticipated to be lecture/lab covering hardware maintenance.

AF Training: 1 course: 80 hours, for hardware maintenance.

AT Training: N/A

5.3.44.4 VISUAL NAVAIDS (REIL/87-89)

Training will be lecture/lab covering hardware maintenance.

AF Training: 1 course: 40 hours, for hardware maintenance.

AT Training: N/A

5.3.44.5 VISUAL NAVAIDS (RRCS/86-87)

Training will be lecture/lab covering hardware maintenance.

AF Training: 1 course: 40 hours, for hardware maintenance.

AT Training: N/A

5.3.45 VOICE SWITCHING AND CONTROL SYSTEM (VSCS) (#1-11)

VSCS provides the intercom, interphone, and air\ground voice connectivity and control functions needed for ATC operations in an ARTCC/ACF.

Training is anticipated to be lecture/lab/CBI covering ATC operations, AF hardware, and software support maintenance.

AF Training: 3 courses: approximately 600 hours for hardware training, 300 hours for NAS manager training, and 800 hours for software support training.

AT Cadre Training: 1 course (possibly in 2 modules): approximately 40 hours (1st module 24 hours for ATCS, 2nd module 40 hours for ATCS supervisor/manager). Taught at the FAATC by the contractor. Cadre will conduct on-site training for all site personnel.

5.3.46 VORTAC (VOR CO-LOCATED WITH TACAN) (#4-03)

VOR/distance measuring equipment (DME) is the final phase of the VORTAC modernization project. VOR/DME expands the current NAS navigational network through the replacement, relocation, conversion, and establishment of VOR and DME systems. The Very High Frequency Omnitest Equipment (VOT) transmits a signal that provides a convenient and accurate standard for checking the operational status of standard very high frequency omnidirectional range (VOR) receivers within the VOT facility use areas.

5.3.46.1 VOR/DME

Training for AF maintenance is a contract option, to be exercised following contract award and as dictated by new equipment design.

AF Training: Contract Option.

AT Training: Not required.

5.3.46.2 VOT

Training for AF will be directed study and OJT courses conducted on-site when the VOT is delivered. AT training is not required.

AF Training: 1 course, 40 hours (directed study).

AT Training: None required

5.3.47 WEATHER MESSAGE SWITCHING CENTER REPLACEMENT (WMSCR) (#3-04)

The Weather Message Switching Center Replacement processes alphanumeric weather data and stores/distributes NOTAMs at the National Aviation Weather Processor (NAWP) Facility sites in Atlanta, GA and Salt Lake City, UT. It will replace the National Communications Center (NATCOM) in Kansas City, MO.

The vendor will conduct prerequisite training for maintenance and software personnel at the vendor's facility prior to WMSCR specific training. WMSCR specific training, which will consist of maintenance training, operator training and software training, will be conducted by the contractor at the two WMSCR sites.

AF Training: Training will consist of one prerequisite maintenance training course, approximately 9 weeks in length, one prerequisite software training course, approximately 13 weeks in length and three WMSCR specific courses with two classes each. Maintenance Course, approximately 40 hours, Operator Course, approximately 40 hours and Software Course, approximately 80 hours.

AT Training: N/A

5.3.48 WEATHER RADAR PROGRAM (NEXRAD) (#4-16)

This project provides a new Doppler weather radar for en route applications. The NEXt generation weather RADar (NEXRAD) is jointly funded by the FAA and the Departments of Commerce and Defense. Seventeen NEXRAD units will serve temporarily as terminal units pending availability of TDWR units (see Terminal Doppler Weather Radar, #4-18).

Training is anticipated to be lecture/lab covering maintenance procedures, and videotape for operator procedures.

AF Training: 4 courses: contractor conducted 240 hours system maintenance course and an 80 hour principal user processor maintenance course; government conducted 400 hour system maintenance course and a 160 hour principal user processor maintenance course.

AT Training: 1 hour videotape presentation on operator procedures.

5.4 TRAINING INFORMATION PROCESS (TIP)

The TIP is designed to provide training information about NAS Plan projects. An overview of the process is shown in Figure 5-8, NAS Training Information Process (TIP). The TIP consists of two major components: Subsystem Training Plans (STPs) and the Training Data Base (TDB). STPs are provided for planning purposes only. The TDB schedules are provided FOR PLANNING PURPOSES ONLY and should not be construed to constitute actual class assignments. The Consolidated Personnel Management Information System (CPMIS) continues to provide all current Fiscal Year class information. STPs provide detailed training information for each NAS Plan project which has AF and AT training requirements. The schedules for each subsystem are developed using software programs, which allow for user entry of data into the Training Data Base. The TDB supports the production of reports which are used by various FAA training organizations for planning and feedback purposes. Further information about STPs and the TDB is provided in Sections 5.4.1 and 5.4.2.

The feedback loop is an essential element of the TIP. This loop enables Regional organizations to channel a user's perspective of the data back to Headquarters. The training specialists who are responsible for developing the data can then utilize the Regional feedback to enhance data for their respective projects or work with appropriate FAA Headquarters offices to resolve issue.

To properly exploit the feedback loop, the field must channel the information through regional AT and AF Training Divisions to the SEIC training representative, who will then insure that the information is delivered to the proper HQ training specialist for action.

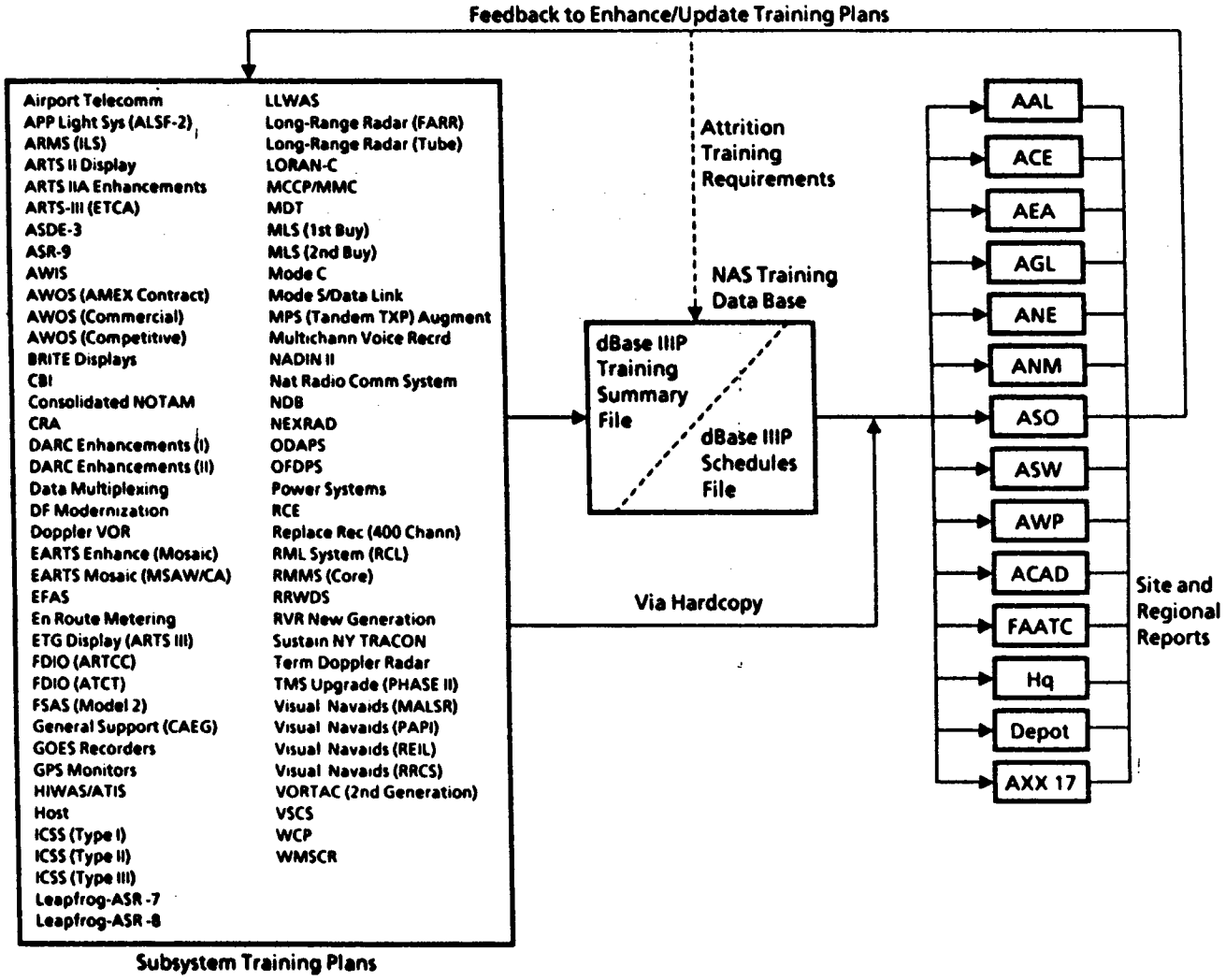


Figure 5-8, NAS Training Information Process (TIP)

5.4.1 Subsystem Training Plans (STPS)

STPs are developed for each NAS Plan subsystem that requires training. The information in the STPs is provided FOR PLANNING PURPOSES ONLY. Each STP includes the initial training required to commission the equipment, as well as descriptions of training required to provide for testing and installation as new subsystems are deployed. Airway Facilities Service defines this as "1E - Training" in the Call for Training process. Appendix B lists all STPs which have been forwarded to Regional offices.

Each STP contains pertinent data collected from all available sources, including system specifications, contracts, RFPs, proposals, interviews with FAA and SEIC program managers and other subject matter experts. The data appears in a standardized format to enhance readability, ease of input to the data base, and use in planning and scheduling.

Early initiation of the STP is a primary objective to enable training requirements to be specified and incorporated into contractual documentation as early as possible. These project training requirements are coordinated with key managers to ensure that they are understood, adequately documented, and satisfied. A standardized format was developed and consists of seven sections:

Section 1.0 Purpose of Plan. The plan is a communication and coordination document for planning, requiring FAA review, modification, and approval.

Section 2.0 System Description. A description of the system's components or functions is provided to define hardware and software characteristics, as well as operational and maintenance requirements.

Section 3.0 Contract Information. A summary of the contract status, which may include: information pertaining to the dates the Request for Proposal (RFP)/Contract was let, identification of the contractors, the number of systems to be procured, and Contract Data Requirements List (CDRL) components the FAA will receive.

Section 4.0 Training Assumptions. Assumptions applicable to Airway Facilities (AF) and Air Traffic (AT) are noted. Because of the early initiation of the STP, assumptions are made to generate an initial training plan. As events emerge to either

confirm or refute the assumptions, revisions are made accordingly.

Section 5.0 Training Requirements. The maintenance concept, training program (course title/hours/description), objectives, prerequisites, number of personnel to be trained and the material and equipment needed to support the course are identified. Much of the information is projected to support planning and is not intended in any way to supplant the normal instructional development process.

Section 6.0 Training Program Analysis. The analysis includes issues that might impact the successful accomplishment of training and defines recommended solution or alternatives. Decisions made to resolve issues are also documented.

Section 7.0 Training Schedules. The schedules and attachments that accompany the STP illustrate equipment delivery schedules, equipment delivery sites and training development schedules. (Refer to Figures 5-9 and 5-10 for samples of the attachments):

Equipment Delivery Sites, Attachment 1. Delivery sites are listed alphabetically by city and grouped alphabetically by region (Figure 5-9)

Training Development Schedule, Attachment 2. The purpose of this schedule is to show training milestones and activities, which are derived from contract data and the training assumptions in the plan (Figure 5-10).

The data in the STPs can assist managers in the training planning process. Appendix C provides a description of their use.

5.4.2 Training Data Base

Information in the TDB is derived directly from data collection and analysis performed during production of the STP. This information is maintained on a microcomputer, utilizing dBASE III Plus, which also produces the reports. The data in each file can be accessed using dBASE III Plus commands or a menu-driven system. Appendix C describes the use of the Training Data Base in more detail.

ATTACHMENT 1: DBRITE EQUIPMENT DELIVERY LIST

FACILITY	STATE	THREE LETTER ID
AAC		
ACADEMY #1	OK	OEX
ACADEMY #2	OK	OEX
ACADEMY #3	OK	OEX
ACADEMY #4	OK	OEX
ACADEMY #5	OK	OEX
ACADEMY #6 and #7	OK	OEX
FAA DEPOT 2 (SDC LOAN)	OK	DEP
FAA DEPOT 3 (HOT)	OK	DEP
AAL		
ANCHORAGE	AK	ANC
FAIRBANKS	AK	FAI
MERRILL	AK	MRI
ACE		
CEDAR RAPIDS	IA	CID
CHESTERFIELD	MO	SUS
DES MOINES	IA	DSM
EPPLEY AIRFIELD	NE	OMA
KANSAS CITY	MO	MCI
KANSAS CITY DOWNTOWN	MO	MKC
LINCOLN	NE	LNK
OMAHA (OFFUTT AFB)	NE	OFF
SIOUX CITY	IA	SUX

Figure 5-9, Equipment Delivery Sites, Sample

ATTACHMENT 2: DBRITE PROJECT TRAINING DEVELOPMENT SCHEDULE

	ACTIVITY	DATE
1.	System Requirements Approved	4/12/83
2.	AT Training Proposal Complete	7/31/85
3.	AF Training Proposal Complete	5/09/84
4.	Procurement Request Released for Training	8/10/84
5.	Contract Award	7/02/86
6.	Preliminary Design Review	10/17/86
7.	Initial TDB Class Schedule	10/05/87
8.	Job Task Analysis Draft Complete	4/28/87
9.	Job Task Analysis Review Complete	6/15/87
10.	Job Task Analysis Final Comp'	7/24/87
11.	Contract Training Plan '	4/28/87
12.	Contract Training P'	8/10/87
13.	Contract Trai' .e	9/30/87
14.	Critical D -e	7/01/87
15.	Post CDR Rev	2/16/88
16.	Course Design - Draft Complete	N/A
17.	Course Design Guide Review Complete	N/A
18.	Course Design Guide Final Complete	N/A
19.	Course Materials Draft Complete	5/05/88
20.	Course Materials Review Complete	6/05/88
21.	Course Materials Final Complete	7/05/88
22.	Final Revision to STP	7/15/88
23.	Final Update to TDB Class Schedule	8/01/88
24.	Deployment Readiness Review	4/27/88
25.	System Delivered to First Operational Site	12/22/88
26.	First ORD	2/28/89
27.	Last ORD	9/28/90

Figure 5-10, Training Development Schedule, Sample

5.4.2.1 Training Data Base Sheets

A Training Data Base Summary Sheet ("Smart Sheet") is developed for each NAS Plan subsystem. The information contained on the "Smart Sheet" provides a summary of the activity for each program. Figure 5-11, Training Data Base Summary Sheet," is an example. Data elements from the sheets are contained in the Training Summary file of the TDB and can be manipulated to produce reports tailored for specific training planning efforts. An example of a tailored report is included as Figure 5-12, FAA Technical Center Project Training Requirements List.

5.4.2.2 Class Schedules

Projected class schedules (to be used for planning purposes only) are developed for each NAS PLAN subsystem for which training is required. These class schedules are entered into the TDB dBASE III Plus Schedules file and are available in the regions via the SEIC training representative.

Figure 5-13, Class Schedule, and Figure 5-14, TDB/Training Requirements Matrix, are examples of the type of reports which may be produced using this file. The Menu Driven System facilitates the extraction of data from the file in several hardcopy formats.

5.4.2.3 Menu Driven System

The Menu Driven System allows training personnel easy access to the information in the two dBase III Plus files that contain class schedules and information from the Training Data Base Summary Sheets. This system has been installed both at FAA Headquarters and in the regions. The data in the files is updated periodically by use of a data link (VIRTUALINK) between all Regional offices and the mainframe computer used at Washington. This link provides users with near real-time data on a demand basis. Users can produce reports based on sorts of the available fields in the files via use of the Menu Driven System and the dBase III Plus program. The Menu Driven System and the Schedules and Training Data Base Summary Sheets can be accessed by all SEIC and FAA Headquarters training managers and SEIC logistics/ training representatives at the Regions, Technical Center and the Aeronautical Center. This information is used to define NAS Plan training requirements and to assess the capability of the FAA Academy and the Regions to support them.

5.5 TRAINING INFORMATION SYSTEM (TIS)

The Training Information System (TIS) represents a significant contribution by the SEIC to the task of planning procurement, development, integration, and implementation of NAS Plan Training.

05/03/89
09:17:57

RECORD NO. : 33
LAST UPDATE :03/31/89

TRAINING DATA BASE

PROJECT NAME: BRITE DISPLAYS
SMART SHEET#: 2160
SEIC TNG MGR: WARDLOW, 646-5915
APT-300 MGR: MAY
ASM-210 MGR: WEIMER
AAT-14 MGR: SHAUGHNESSY, 267-9210
TRNG SPEC: 2552A

BROWN BOOK#: 2-16
CURRENT STP: 07/21/88
TNG P.R. COMPL : 08/10/84
AT T.P. COMPL: 07/31/85
CONTRACT DATE: 07/02/86
PDR DATE : 10/17/86
CDR DATE: 07/01/87

FAA PROG MGR: BOB PALMERSHEIM, AAP-320, 267-8362
CONTRACTING OFFICER: ABE TENEBAUM, , 267-3655
SEIC PROG MGR: LU LABOY, 646-5677
ACAD.TNG.MGR.(COTR) AF: ROGER MORGAN, FTS-747-2539
ACAD.TNG.MGR.(COTR) AT: TOM SAUNDERS, FTS 747-4155

PROJECT CONTRACTOR: UNYSIS
CONTRACTOR TRNG REP: BERNIE ZABER, 215-648-`810

OF SITES IMPACTED: 324 # OF SY[illegible]CURED: 401
FIRST INSTALLATION LOCATION: READING [illegible] DATE: 04/21/89
TEST LOCATION: FAATC [illegible] COMPL: 08/09/88
LAST SITE COMMISSIONED: 05/31/[illegible]
DATE EQUIP DELIVERED TO ACADF[illegible] [illegible]EY DAYS: 36
AF TPR ACAD: 4 TC: 10 TOT: 923
AT TPR ACAD: 0 TC: [illegible] TOT: 7790

NC OF CONTRACTOR COU[illegible] [illegible]SES: 2 CONTR TPR: 12
CONTRACTOR TRAININ[illegible] [illegible]NDS: 08/05/88
LOCATION OF CONT[illegible] [illegible]INING: CONTR FACILITY
LOCATION OF CONT. [illegible]AINING: CONTR FACILITY

AF JTA ?:YES DATE[illegible] / AT JTA ?:NO DATE: N/A
AF CTP ?:YES DATE: [illegible]/87 AT CTP ?:NO DATE: N/A
AF CBI ?:NO DATE: N/A AT CBI ?:NO DATE: N/A

IS A PROPOSED TRAINING SCHEDULE IN THE TDB ?: YES

DATE AF TRAINING IS ASSUMED BY THE FAA: 11/30/88
DATE AT TRAINING IS ASSUMED BY THE FAA: 04/21/89
METHOD AF: CR/HO AT: CR/HO

SYSTEM PRINCIPLES EXAM #: N/A DATE AVAIL: N/A
PERFORMANCE EXAMINATION #: N/A DATE AVAIL: N/A

BRITE DISPLAYS Joint USAF/FAA procurement. AT: AT trng will be satisfied by modification of existing BRITE lesson plans by AAC. All AT trng will be accomplished onsite. Contr developed maint course & provided two classes. FAA COTR attended initial class to develop Acad course. Three AF techs to be trained at most sites to satisfy 1E trng. Sites with extended hours to train 5 techs. Acad to contract for concurrent classes during trng period to meet heavy trng schedule.

Figure 5-11, Training Data Base Summary Sheet, Sample

Page No. 1
05/08/89

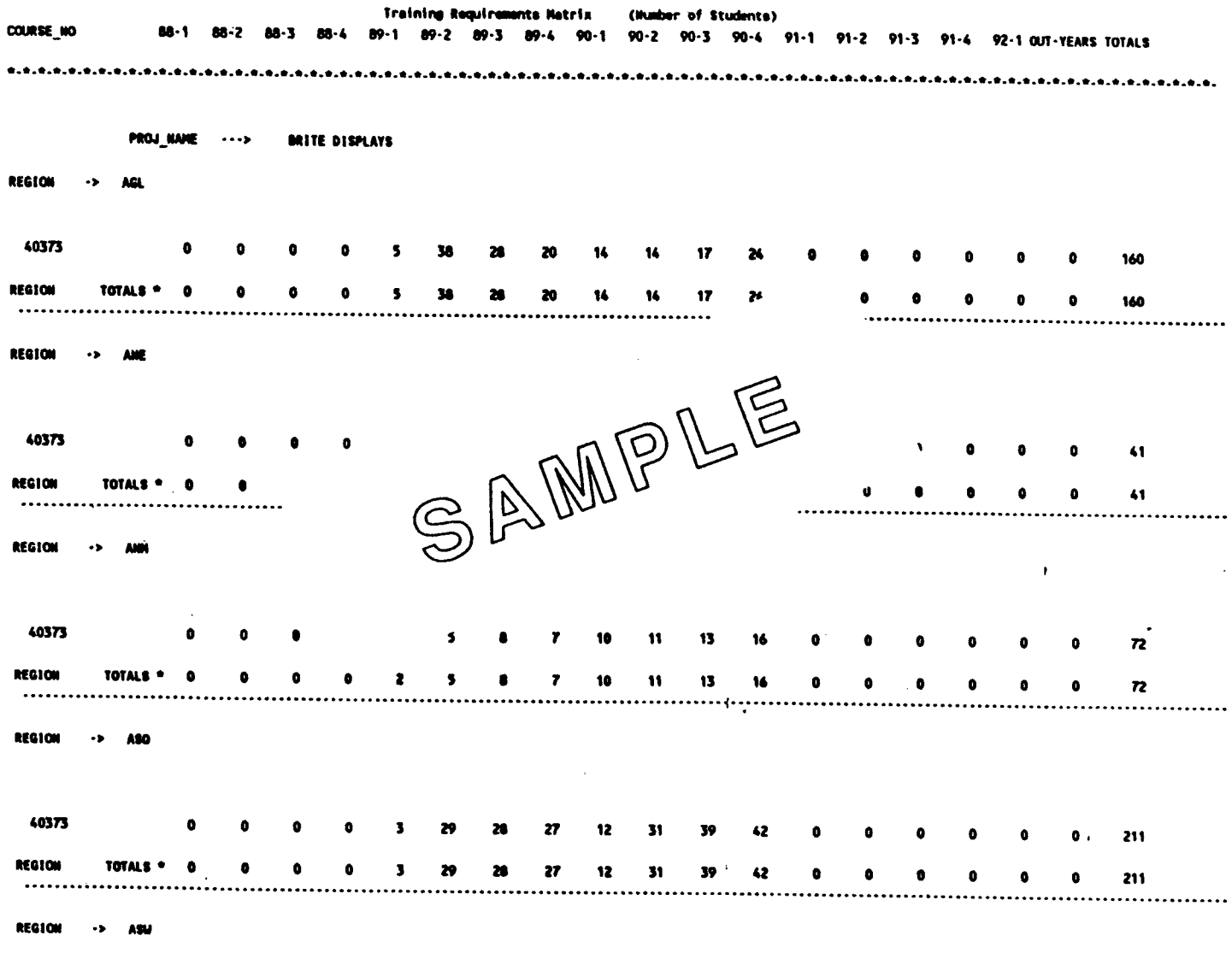
NAS ID	PROJECT NAME		BROWN BOOK	TEST LOCATION	TEST START	AT STUDENTS	AF STUDENTS
211100	VSCS		1-11	FAATC	05/15/90	0	
21120A	AAS (ISSS)		1-12	FAATC	01/01/91	10	
211320	AUTO ENROUTE ATC (AERA 1)	*	1-13	FAATC	01/31/89	0	
220900	ARTS IIA - MODE S /ASR-9		2-09	FAATC	05/30/89	0	
221200	TOWER COMM SYSTEM		2-12	FAATC/ATLANTA,GA.	08/05/92	0	
230500	WCP/DLP		3-05	FAATC	05/09/89	0	
241200	MODE S/DATA LINK		4-12	FAATC	06/05/89	0	
250700	NADIN II		5-07	FAATC	10/30/90	0	
270800	TERMINAL DOPL RDR		4-18	FAATC	10/23/91	5	
21120D	AAS (ACCC)		1-12	FAATC	05/01/93	0	
21120C	AAS (TCCC)		1-12	FAA[illegible]	08/01/92	0	
21120B	AAS (TAAS)		1-12	[illegible]	04/01/93	0	
23010C	FSAS (MODEL 1,FULL CAP.)		3-01		12/12/89	5	
21120E	AAS (PAMRI)		1[illegible]		06/01/90	6	
221800	SUSTAIN N.Y.TRACON (STAGE II)				4/14/89	4	
24030C	VORTAC (VOR/DME)				12/28/92	0	
*** Total ***						30	171

Figure 5-12, FAATC Project Training Requirements List, Sample

Report Format # 1
Sort by Course and Class

Line Number	Project Name	Course Length	Start Date	End Date	Specialty	Training Location	Region	AFS or AT HUB	Cost Code	Equipment Location (Site ID)	Number AF of or Students AT
** Course Number --> 40373											
* Class Number --> 89001											
221600FE101002	BRITE DISPLAYS	80	11/30/88	12/13/88	QUAL AF PERS	ACADEMY	AAC	0818A	???	OEX	1 AF
221600FE103007	BRITE DISPLAYS	80	11/30/88	12/13/88	QUAL AF PERS	ACADEMY	AAC	0818A	???	OEX	1 AF
221600FE106005	BRITE DISPLAYS	80	11/30/88	12/13/88	QUAL AF PERS	ACADEMY	AEA	18350	1835D	RDG	1 AF
221600FE103012	BRITE DISPLAYS	80	11/30/88	12/13/88	QUAL AF PERS	ACADEMY	ASW	ABQ	0816A	AMA	1 AF
221600FE103011	BRITE DISPLAYS	80	11/30/88	12/13/88	QUAL AF PERS	*	ASO	0848A	0848K	LEX	1 AF
221600FE103010	BRITE DISPLAYS	80	11/30/88	12/13/88	QUAL AF PER*		AGL	08640	0864Z	MLI	1 AF
221600FE103006	BRITE DISPLAYS	80	11/30/88	12/13/88	QUAL *		ASW	SAT	0858A	HFE	1 AF
221600FE103004	BRITE DISPLAYS	80	11/30/88	12/13/88			ASW	SAT	0858A	HRL	1 AF
221600FE107006	BRITE DISPLAYS	80	11/30/88	12/			ASW	SAT	0858A	HRL	1 AF
221600FE103002	BRITE DISPLAYS	80	11/30/				AGL	08610	0861B	FNT	1 AF
221600FE103005	BRITE DISPLAYS	80					SW	SAT	0858A	BRO	1 AF
221600FE103009	BRITE DISPLAYS	*					*	08610	0861J	LAN	1 AF
* Subsubtotal *											12
* Class Number --> 89002											
221600FE103003	BRITE DISPLAYS				ERS	ACADEMY	ASW	AUS	0818A	MAF	1 AF
221600FE104003	BRITE DISPLAYS				AL AF PERS	ACADEMY	AGL	08660	0866L	GRB	1 AF
221600FE104006	BRITE DISPLAYS			/88	QUAL AF PERS	ACADEMY	ASO	0831A	0831T	CSG	1 AF
221600FE104005	BRITE DISPLAYS			12/20/88	QUAL AF PERS	ACADEMY	ANM	S8300	S8300	BIL	1 AF
221600FE104007	BRITE DISPLAYS		12/07/88	12/20/88	QUAL AF PERS	ACADEMY	ASW	0838A	0838Y	FSM	1 AF
221600FE104002	BRITE DISPLAYS		12/07/88	12/20/88	QUAL AF PERS	ACADEMY	ACE	08210	08215	LNK	1 AF
221600FE104004	BRITE DISPLAYS	80	12/07/88	12/20/88	QUAL AF PERS	ACADEMY	AGL	08660	0866T	ATW	1 AF
221600FE104012	BRITE DISPLAYS	80	12/07/88	12/20/88	QUAL AF PERS	ACADEMY	ASO	0846A	0846J	AGS	1 AF
221600FE114007	BRITE DISPLAYS	80	12/07/88	12/20/88	QUAL AF PERS	ACADEMY	ANM	S8300	S830E	CPR	1 AF
221600FE178003	BRITE DISPLAYS	80	12/07/88	12/20/88	QUAL AF PERS	ACADEMY	AEA	18400	18402	BWI	1 AF
221600FE105001	BRITE DISPLAYS	80	12/07/88	12/20/88	QUAL AF PERS	ACADEMY	ASW	LIT	0838A	MLU	1 AF
221600FE114005	BRITE DISPLAYS	80	12/07/88	12/20/88	QUAL AF PERS	ACADEMY	AEA	18280	18284	ERI	1 AF
* Subsubtotal *											12
* Class Number --> 89003											
221600FE104010	BRITE DISPLAYS	80	01/18/89	01/31/89	QUAL AF PERS	ACADEMY	AGL	08640	0864N	PIA	1 AF

Figure 5-13, Class Schedule, Sample



Training Requirements Matrix (Number of Students)

COURSE_NO	88-1	88-2	88-3	88-4	89-1	89-2	89-3	89-4	90-1	90-2	90-3	90-4	91-1	91-2	91-3	91-4	92-1	OUT-YEARS	TOTALS
PROJ_NAME ---> BRITE DISPLAYS																			
REGION -> AGL																			
40373	0	0	0	0	5	38	28	20	14	14	17	24	0	0	0	0	0	0	160
REGION TOTALS *	0	0	0	0	5	38	28	20	14	14	17	24		0	0	0	0	0	160
REGION -> AME																			
40373	0	0	0	0												0	0	0	41
REGION TOTALS *	0	0												0	0	0	0	0	41
REGION -> ANM																			
40373	0	0	0			5	8	7	10	11	13	16	0	0	0	0	0	0	72
REGION TOTALS *	0	0	0	0	2	5	8	7	10	11	13	16	0	0	0	0	0	0	72
REGION -> ASO																			
40373	0	0	0	0	3	29	28	27	12	31	39	42	0	0	0	0	0	0	211
REGION TOTALS *	0	0	0	0	3	29	28	27	12	31	39	42	0	0	0	0	0	0	211
REGION -> ASW																			

Figure 5-14, TDB/Training Requirements Matrix, Sample

TIS was developed to meet the critical need for documenting and monitoring all FAA training. TIS enables users to pinpoint the progress of any training project. When used in conjunction with the SEIC-developed training data base (TDB), users can easily tie equipment delivery and tryout to key training dates to insure timely completion of training prior to Initial Operating Capability (IOC).

TIS was designed to be a user-friendly menu-driven system operating on dBase III Plus; it allows users with minimal computer experience to quickly and easily add, verify, or retrieve data relative to FAA project-specific training. Because it enables users from different services and locations to extract current up-to-the-minute data, TIS enhances inter-departmental communication and improves the efficiency and accuracy of the training development and procurement process.

5.5.1 Purpose of the TIS.

TIS was designed in response to the need for a reliable, timely tool for tracking FAA NAS training projects. In recent years the number of simultaneous ongoing training projects has dramatically increased. Due to the inception of the NAS Plan in 1984, a more efficient means of tracking and monitoring the progress of the various projects from start to finish became necessary. TIS serves as a data depository containing all critical information pertinent to a NAS training project in an easily accessible menu-driven format. In addition to information regarding project manager assignments, budget, finance, and other data customarily contained in smart sheets, subsystem training plans, training proposals, and procurement requests, TIS includes checklists for training deliverables -- FAA and contractor-developed. Discrete events in the training cycle, such as training strategy meetings, due dates for delivery, and turn-around of specific training deliverables, are built into the data base, easily accessible to AHT-400, AHT-500, AAT-14, and ASM-210 personnel. Initially, hard copies of data will be readily available to FAA Academy personnel; ultimately the FAA Academy will be linked to the Headquarters TIS and will be able to access all TIS data via computer.

5.5.2 TIS Description

The Training Information System is a dBASE III Plus application developed by the SEIC to help the FAA training community track the various phases of training procurement and development. Its menu-driven user interface allows easy access to the various hierarchial data files. Figure 5-15, TIS Data Structure, shows the relation between some of the major categories of information contained in the TIS data base.

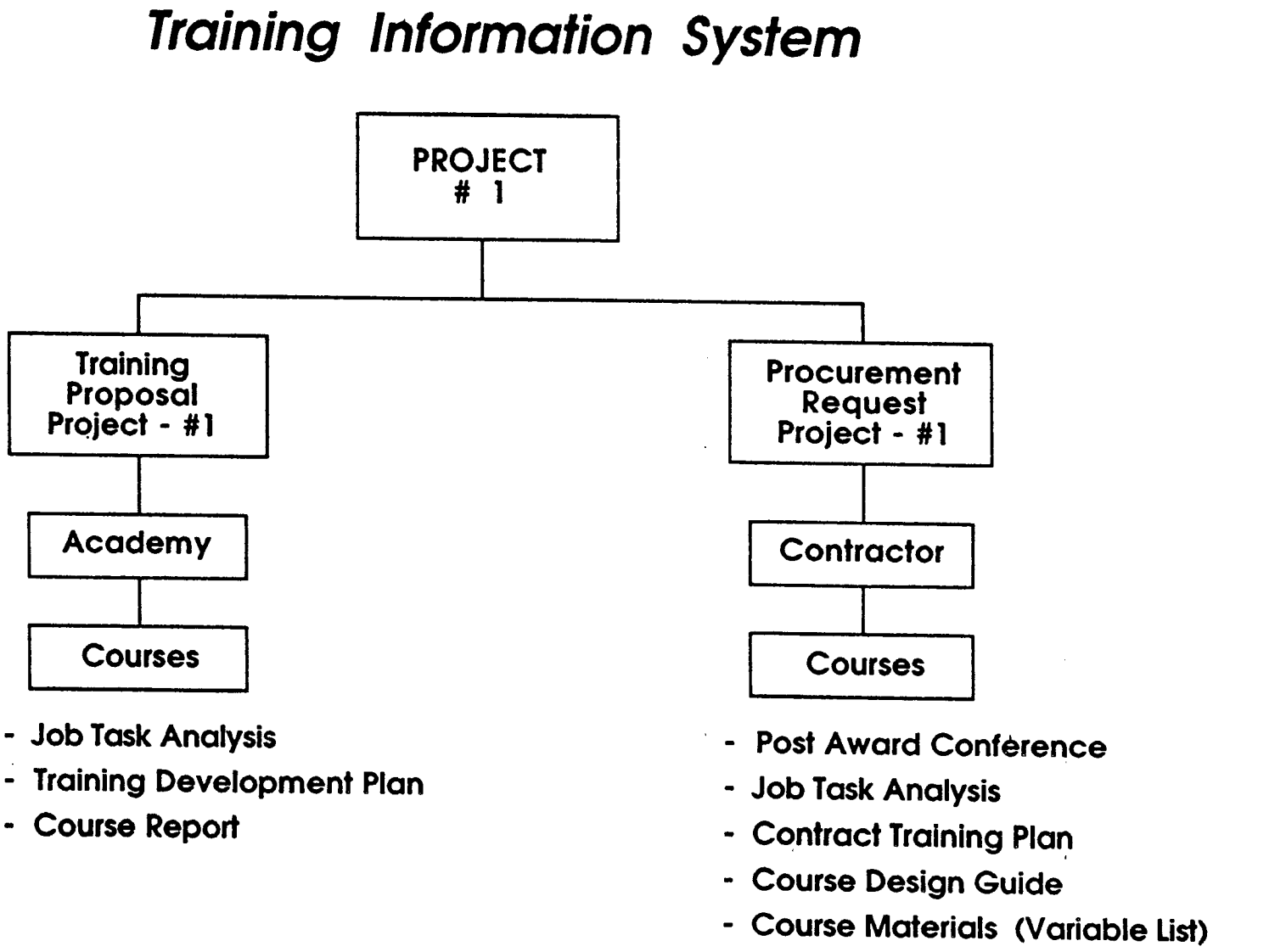


Figure 5-15, TIS Data Structure

A master record is maintained for each project which contains manager assignments, budgetary/financial data, and summarized data from the project's Subsystem Training Plan. An unlimited number of Training Proposals (TPs) and Procurement Requests (PRs) can be identified for each project, with each one possessing 21 items of data ranging from personnel assignments and status flags to event dates and action notices.

Course-specific information is linked to either Training Proposals, if they are FAA Academy-developed, or to Procurement Requests, if they are contractor developed. There is no limit to the number of courses that can be identified for either TPs or PRs. A variable list of deliverables (FAA Academy or Contractor) is maintained for each course. For example, if the course is developed by the FAA Academy, dates for the job task analysis, training development plan/course report are tracked. If the course is contractor-developed, dates for the post award conference, job task analysis, contract training plan, course design guide and a variety of course materials are tracked. Numerous dates and comments summarize the status of each of the deliverables.

Output is available as either "canned" reports or as user-defined reports. The TIS analyzes the data base and alerts the training managers of conditions warranting further attention. An Events Calendar allows users to keep abreast of non-project related events. TIS was designed with certain safeguards against accidental or unauthorized data file manipulation. Password protection and multiple-access levels control user access to the data base.

5.6 TRAINING REQUIREMENTS

The NAS Training Data Base contains training planning information for NAS Plan programs. The attached tables are summaries of the number of students anticipated to be trained for NAS Plan programs for fiscal years 1990 through 1994.

Table 5-2 provides information for Air Traffic NAS Plan Training - Students by Project by Year and Table 5-3 provides information for Airway Facilities NAS Plan Training - Students by Project by Year. It should be emphasized that this is planning information only, and changes in student loads occur as the result of slips and delays in programs.

Table 5-4 lists the courses planned to be taught for Air Traffic for FY-90, including Course Number, Course Title, and the number of students to be trained in FY-90. Table 5-5 lists the courses planned to be taught for Airway Facilities for FY-90, including Course Number, Course Title, and the number of students to be trained in FY-90. This is planning information only and is subject to revision due to reprogramming requirements.

TABLE 5 - 2. AIR TRAFFIC NAS PLAN TRAINING - STUDENTS BY PROJECT BY YEAR

	FY-90	FY-91	FY-92	FY-93	FY-94
ADVANCED AUTOMATION SYSTEM (AAS) (#1-12)					
PAMRI	0	24	108	108	0
ISSS	0	0	0	1503	2816
TAAS	0	0	0	0	600
ACCC	0	0	0	0	150
TCCC	0	0	0	0	600
AERONAUTICAL DATA LINK (ADL) (#3-05) [was WCP]	0	0	0	0	0
AIRPORT SURFACE DETECTION EQUIPMENT RADAR (ASDE-3) (#4-14)	77	204	1297	0	0
ARTS IIA ENHANCEMENTS (#2-06)	0	0	0	0	0
ARTS IIA INTERFACE WITH MODE S/ASR 9 (#2-09)	0	4100	5193	0	0
AUTOMATIC TERMINAL INFORMATION SERVICE (ATIS) RECORDERS (#2-10)	132	0	0	0	0
AUTOMATED WEATHER OBSERVING SYSTEM (AWOS) COMMERCIAL (#3-09)	0	0	0	0	0
AWOS DATA ACQUISITION SYSTEM (ADAS) (#3-09)	0	0	0	0	0
CENTRAL CONTROL AND MONITORING SYSTEM (CCMS) (#1-15)	0	0	0	0	0
CENTRAL WEATHER PROCESSOR (CWP/MWP) (#3-02)	198	750	0	0	0
CONFLICT RESOLUTION ADVISORY (CRA) FUNCTION (#1-09)	7897	0	0	0	0
DIGITAL BRIGHT RADAR INDICATOR TOWER EQUIPMENT (DBRITE) (#2-16)	5913	2581	0	0	0
DIRECTION FINDER (DF) (#4-11)	1748	621	0	0	0
FLIGHT DATA ENTRY AND PRINTOUT DEVICES (#1-02)					
FDIO (ARTCC)	0	0	0	0	0
FDEP (ATCT)	0	0	0	0	0
FLIGHT SERVICE AUTOMATION SYSTEM (FSAS) (#3-01)	36	0	0	0	0
GENERAL SUPPORT (#6-16)					
SOLID STATE RADAR BEACON DECODERS	0	0	0	0	0
ARSR-3/3LW	0	0	0	0	0
GLOBAL POSITIONING SYSTEM (GPS) MONITORS (#4-05)	0	0	0	0	0
HAZARDOUS IN-FLIGHT WEATHER ADVISORY SERVICE (HIWAS) (#3-08)	68	0	0	0	0

TABLE 5 - 2. AIR TRAFFIC NAS PLAN TRAINING - STUDENTS BY PROJECT BY YEAR (CONT'D)

	FY-90	FY-91	FY-92	FY-93	FY-94
INSTRUMENT LANDING SYSTEM (ILS) (#4-06)					
ARMS (ILS)	0	0	0	0	0
ILS (2ND BUY)	0	0	0	0	0
INTEGRATED COMMUNICATIONS SWITCHING SYSTEM (ICSS) (#3-13)					
ICSS (TYPE I)	0	0	0	0	0
ICSS (TYPE II)	60	20	0	0	0
ICSS (TYPE III PHASE 1A)	250	100	0	0	0
ICSS (TYPE III PHASE 1B)	130	210	160	0	0
LONG RANGE RADAR (LRR) PROGRAM (#4-15)					
LRR (MODS) (ARSR 1 & 2 and FPS-20)	0	0	0	0	0
LRR (ARSR-4)	0	893	3820	2570	0
LORAN-C (#4-17)	1000	750	0	0	0
LOW LEVEL WIND SHEAR ALERT SYSTEM (LLWAS) (#3-12)					
LLWAS (6 SENSOR/CLIMATRONICS)	2000	1000	0	0	0
LLWAS (11 SEN EXP/FWSI))	2000	1000	0	0	0
MAINTENANCE CONTROL CENTER (MCC) (#6-04)					
MCCP/MMC	0	0	0	0	0
MCC/GNAS	0	0	0	0	0
MODE S/DATA LINK (MODE S) (#4-12)	0	0	0	0	0
MULTICHANNEL VOICE RECORDERS (#2-11)					
MULTICHANNEL VOICE RECORDERS	700	700	0	0	0
REPLACE REC (HCVR)	848	1000	0	0	0
NATIONAL AIRSPACE DATA INTERCHANGE NETWORK (NADIN II) (#5-07)	0	0	0	0	0
NATIONAL RADIO COMMUNICATIONS SYSTEM (NARACS/PHASE II) (#6-14)	141	0	0	0	0
OCEANIC DISPLAY AND PLANNING SYSTEM (ODAPS) (#1-05)	60	0	0	0	0
OFFSHORE FLIGHT DATA PROCESSING SYSTEM (OFDPS) (#1-16)	10	0	0	0	0
POWER SYSTEMS (#6-07)					
SWITCHGEAR MOD	0	0	0	0	0
ARTCC ENGINE MOD	0	0	0	0	0

TABLE 5 - 2. AIR TRAFFIC NAS PLAN TRAINING - STUDENTS BY PROJECT BY YEAR (CONT'D)

	FY-90	FY-91	FY-92	FY-93	FY-9
ARTCC SWITCHGEAR	0	0	0	0	0
ARTCC UPS	0	0	0	0	0
ARTCC ENGINE GENERATOR	0	0	0	0	0
RADIO CONTROL EQUIPMENT (RCE) (#5-08)	0	0	0	0	0
REMOTE MAINTENANCE MONITORING SYSTEM (RMMS) (#6-01)					
ERMS	0	0	0	0	0
MPS ENHANCEMENTS	0	0	0	0	0
RMMS/ARSR-3	0	0	0	0	0
MMS/IMCS	0	0	0	0	0
RML REPLACEMENT AND EXPANSION (#5-03)	0	0	0	0	0
RUNWAY VISUAL RANGE (RVR) NEW GENERATION (#4-08)	225	2010	2680	85	0
SUSTAIN THE NEW YORK TRACON (STAGE II) (#2-18)	30	0	0	0	0
TELEVISION MICROWAVE LINK (TML) (#5-04)	0	0	0	0	0
TERMINAL DOPPLER WEATHER RADAR (TDWR) (#4-18)	0	0	1100	1100	0
TERMINAL RADAR PROGRAMS (#4-13)					
ASR-9	1503	1172	271	0	0
LEAPFROG - ASR-7	100	100	100	0	0
LEAPFROG - ASR-8	800	400	400	0	0
TOWER COMMUNICATIONS SYSTEM (TCS) (#2-12)	0	0	0	280	550
TRAFFIC MANAGEMENT SYSTEM (TMS) - PHASE II STAGE 2 (#1-06)	449	100	0	0	0
VISUAL NAVAIDS (#4-09)					
VISUAL NAVAIDS (MALSR/85)	0	0	0	0	0
VISUAL NAVAIDS (MALSR/86-88)	0	0	0	0	0
VISUAL NAVAIDS (PAPI/86)	0	0	0	0	0
VISUAL NAVAIDS (REIL/87-89)	0	0	0	0	0
VISUAL NAVAIDS (RRCS/86-87)	0	0	0	0	0
VOICE SWITCHING AND CONTROL SYSTEM (VSCS) (#1-11)	0	40	860	4597	3695

TABLE 5 - 2. AIR TRAFFIC NAS PLAN TRAINING - STUDENTS BY PROJECT BY YEAR (CONT'D)

	FY-90	FY-91	FY-92	FY-93	FY-94
VORTAC (VOR CO-LOCATED WITH TACAN) (#4-03)					
VOR/DME	0	0	0	0	0
VOT	0	0	0	0	0
WEATHER MESSAGE SWITCHING CENTER REPLACEMENT (WMSCR) (#3-04)	0	0	0	0	0
WEATHER RADAR PROGRAM (NEXRAD) (#4-16)	15	35	105	35	0

TABLE 5 - 3. AIRWAY FACILITIES NAS PLAN TRAINING - STUDENTS BY PROJECT BY YEAR

	FY-90	FY-91	FY-92	FY-93	FY-94
ADVANCED AUTOMATION SYSTEM (AAS) (#1-12)					
PAMRI	0	105	310	284	0
ISSS	0	0	0	215	386
TAAS	0	0	0	0	315
ACCC	0	0	0	0	105
TCCC	0	0	0	0	315
AERONAUTICAL DATA LINK (ADL) (#3-05) [was WCP]	10	10	50	60	0
AIRPORT SURFACE DETECTION EQUIPMENT RADAR (ASDE-3) (#4-14)	8	48	40	0	0
ARTS IIA ENHANCEMENTS (#2-06)	36	0	0	0	0
ARTS IIA INTERFACE WITH MODE S/ASR 9 (#2-09)	0	100	156	0	0
AUTOMATIC TERMINAL INFORMATION SERVICE (ATIS) RECORDERS (#2-10)	297	299	0	0	0
AUTOMATED WEATHER OBSERVING SYSTEM (AWOS) COMMERCIAL (#3-09)	84	0	0	0	0
AWOS DATA ACQUISITION SYSTEM (ADAS) (#3-09)	0	48	60	12	0
CENTRAL CONTROL AND MONITORING SYSTEM (CCMS) (#1-15)	60	24	0	0	0
CENTRAL WEATHER PROCESSOR (CWP/MWP) (#3-02)	50	65	0	0	0
CONFLICT RESOLUTION ADVISORY (CRA) FUNCTION (#1-09)	0	0	0	0	0
DIGITAL BRRIGHT RADAR INDICATOR TOWER EQUIPMENT (DBRITE) (#2-16)	376	103	0	0	0
DIRECTION FINDER (DF) (#4-11)	60	0	0	0	0
FLIGHT DATA ENTRY AND PRINTOUT DEVICES (#1-02)					
FDIO (ARTCC)	16	12	0	0	0
FDEP (ATCT)	48	36	0	0	0
FLIGHT SERVICE AUTOMATION SYSTEM (FSAS) (#3-01)	60	240	60	0	0
GENERAL SUPPORT (#6-16)					
SOLID STATE RADAR BEACON DECODERS	0	60	120	60	65
ARSR-3/3LW	45	24	0	0	0
GLOBAL POSITIONING SYSTEM (GPS) MONITORS #4-05)	0	0	12	0	0
HAZARDOUS IN-FLIGHT WEATHER ADVISORY SERVICE (HIWAS) (#3-08)	153	155	0	0	0

TABLE 5 - 3. AIRWAY FACILITIES NAS PLAN TRAINING - STUDENTS BY PROJECT BY YEAR (CONT'D)

	FY-90	FY-91	FY-92	FY-93	FY-94
INSTRUMENT LANDING SYSTEM (ILS) (#4-06)					
ARMS (ILS)	85	84	124	96	124
ILS (2ND BUY)	3	0	0	0	0
INTEGRATED COMMUNICATIONS SWITCHING SYSTEM (ICSS) (#3-13)					
ICSS (TYPE I)	192	192	192	192	100
ICSS (TYPE II)	30	0	0	0	0
ICSS (TYPE III PHASE 1A)	30	160	150	100	100
ICSS (TYPE III PHASE 1B)	0	0	0	150	100
LONG RANGE RADAR (LRR) PROGRAM (#4-15)					
LRR (MODS) (ARSR 1 & 2 and FPS-20)	173	0	0	0	0
LRR (ARSR-4)	0	0	80	82	0
LORAN-C (#4-17)	174	0	0	0	0
LOW LEVEL WIND SHEAR ALERT SYSTEM (LLWAS) (#3-12)					
LLWAS (6 SENSOR/CLIMATRONICS)	136	0	0	0	0
LLWAS (11 SEN EXP/FWSI))	176	0	0	0	0
MAINTENANCE CONTROL CENTER (MCC) (#6-04)					
MCCP/MMC	160	196	68	68	0
MCC/GNAS	0	0	60	60	0
MODE S/DATA LINK (MODE S) (#4-12)	0	60	120	120	0
MULTICHANNEL VOICE RECORDERS (#2-11)					
MULTICHANNEL VOICE RECORDERS	200	200	0	0	0
REPLACE REC (HCVR)	20	43	0	0	0
NATIONAL AIRSPACE DATA INTERCHANGE NETWORK (NADIN II) (#5-07)	7	115	56	0	0
NATIONAL RADIO COMMUNICATIONS SYSTEM (NARACS/ PHASE II) (#6-14)	45	45	0	0	0
OCEANIC DISPLAY AND PLANNING SYSTEM (ODAPS) (#1-05)	92	0	0	0	0
OFFSHORE FLIGHT DATA PROCESSING SYSTEM (OFDPS) (#1-16)	20	0	0	0	0
POWER SYSTEMS (#6-07)					
SWITCHGEAR MOD	0	120	20	0	0
ARTCC ENGINE MOD	0	80	120	20	0

TABLE 5 - 3. AIRWAY FACILITIES NAS PLAN TRAINING - STUDENTS BY PROJECT BY YEAR (CONT'D)

	FY-90	FY-91	FY-92	FY-93	FY-
ARTCC SWITCHGEAR	0	0	150	70	0
ARTCC UPS	0	0	160	60	0
ARTCC ENGINE GENERATOR	0	0	160	60	0
RADIO CONTROL EQUIPMENT (RCE) (#5-08)	100	200	200	0	0
REMOTE MAINTENANCE MONITORING SYSTEM (RMMS) (#6-01)					
ERMS	0	585	780	780	24(
MPS ENHANCEMENTS	20	10	0	0	0
RMMS/ARSR-3	15	10	0	0	0
MMS/IMCS	108	21	21	0	0
RML REPLACEMENT AND EXPANSION (#5-03)	103	0	0	0	0
RUNWAY VISUAL RANGE (RVR) NEW GENERATION (#4-08)	60	216	186	0	0
SUSTAIN THE NEW YORK TRACON (STAGE II) (#2-18)	24	0	0	0	0
TELEVISION MICROWAVE LINK (TML) (#5-04)	12	51	39	0	0
TERMINAL DOPPLER WEATHER RADAR (TDWR) (#4-18)	0	0	36	60	60
TERMINAL RADAR PROGRAMS (#4-13)					
ASR-9	168	120	120	0	0
LEAPFROG - ASR-7	0	24	3	0	0
LEAPFROG - ASR-8	32	88	0	0	0
TOWER COMMUNICATIONS SYSTEM (TCS) (#2-12)	0	0	0	100	15(
TRAFFIC MANAGEMENT SYSTEM (TMS) - PHASE II STAGE 2 (#1-06)	180	0	0	0	0
VISUAL NAVAIDS (#4-09)					
VISUAL NAVAIDS (MALSR/85)	24	24	0	0	0
VISUAL NAVAIDS (MALSR/86-88)	60	30	21	0	0
VISUAL NAVAIDS (PAPI/86)	60	60	60	60	0
VISUAL NAVAIDS (REIL/87-89)	60	40	20	0	0
VISUAL NAVAIDS (RRCS/86-87)	95	60	24	28	0
VOICE SWITCHING AND CONTROL SYSTEM (VSCS) (#1-11)	0	14	48	240	28

TABLE 5 - 3. AIRWAY FACILITIES NAS PLAN TRAINING - STUDENTS BY PROJECT BY YEAR (CONT'D)

	FY-90	FY-91	FY-92	FY-93	FY-94
VORTAC (VOR CO-LOCATED WITH TACAN) #4-03)					
VOR/DME	0	0	312	132	0
VOT	69	96	96	0	0
WEATHER MESSAGE SWITCHING CENTER REPLACEMENT (WMSCR) (#3-04)	28	48	6	0	0
WEATHER RADAR PROGRAM (NEXRAD) (#4-16)	35	50	75	45	0

Table 5-4. Air Traffic Courses for FY-90

Course Number	Course Title	No. of Students FY-90
50003	Advanced AT Control for International Partici	6
50004	Air Traffic Facility Administration Course FO	12
50010	Airspace Management	160
50018	Airspace Procedures Course	48
50027	Radar Qualification Terminal	840
50028	Terminal Fundamentals	880
50030	Tower Cab Training	880
50112	CWSU Flow Management Instructor Coordinator	16
50113	National Traffic Management	290
50114	CARF Indoctrination Course	64
50116	Enroute Fundamentals	1248
50126	Enroute RTF - Site Specific	240
50127	Enroute Phase XA - Radar Air Traffic Control	848
50201	FSS Enroute Flight Advisory Service	60
50230	National FSS Initial Qualification Program	300
50234	National FSS Follow-on	144
50302	ATC Indoctrination for Executives	66
50310	Air Traffic Facility Training Administration	195
50315	Quality Assurance for Evaluators Course	98
50320	National Air Traffic Training Program (ENR/TE	3564
50325	Placement	2138
53003	Ultra Programming, Terminal Automatn Spec, Pha	48
53010	ARTS IIIA for Automation Specialists, Phase V	48
53021	ARTS IIA Ground-Up for Automation Specialists	36
53023	ADA Program Design Language (Byron)	72
53024	Advance ADA Programming	24
53132	Host Computer System for Automation Specialis	36
53200	Model 1 Flight SVS Data Processing System AUS	24
53201	Transaction Application Language (TAL) Progra	18
58342	Predevel. PH II Basic Aviation/AT Familiariz	24

Table 5-5. Airway Facilities Courses for FY-90

Course Number	Course Title	No. of Students FY-90
40023	ICSS Type 1 Maintenance	130
40024	ICSS Type 2 Maintenance	30
40034	Radio Control Equipment for Technicians	240
40035	Dictaphone Recorders	60
40114	Air Conditioning	132
40121	Cable Fault Analysis and Repair	156
40122	Power Conditioning System (PCS) for RML	12
40127	Engines and Control Panels	120
40128	Enginer Generator Control Devices	120
40129	Diesel Engine Generators, 500KW	32
40130	ARTCC Standby Power and Distribution System	16
40131	ARTCC Power Conditioning System	24
40132	Boilers and Chillers	84
40133	Environmental Systems and Controls	93
40135	ALSF II (Godfrey)	24
40136	ALSF II (Airflow)	48
40137	Lghtng Protection, Grnding, Bnding, Shielding (L	300
40149	Exude PCS Maintenance	104
40213	Runway Visual Range Equipment (Type FA-7861)	24
40225	VHF/UHF Doppler Direction Finder (DF) System	36
40227	Remoting Equipment for VHF DF	27
40232	AN/GRN-27 (Category II ILS)	48
40233	Instrument Landing System Concepts (ILS)	192
40235	ILS Wilcox Mark IA	48
40236	ILS AIL Mark IB	32
40240	ILS Capture Effect Glide Slope	96
40252	Runway Visual Range Equipment (Tasker 500)	80
40257	Solid State Direction Finder (DF), Type FA-99	96
40258	Distance Measuring Equipment, Models FA-8974/	48
40261	Doppler Omnirange (DVOR) System	60
40263	Precision Approach Path Indicator (PAPI) Main	108
40264	Non-Directional Beacon System (NDB)	108
40269	Loran-C Maintenance	120
40270	ARMS	252
40271	VDF Maintenance	84

Table 5-5. Airway Facilities Courses for FY-90 (CONT'D)

Course Number	Course Title	No. of Students FY-90
40274	Low Level Windshere Alert System, (LLWAS)	64
40276	Common Principles for VDR/TACAN Technicians	176
40277	LLWAS (Climatronics) with MOD	72
40280	Remote Radio Control System Maintenance	60
40327	Bright Radar Indicator Tower Equipment (BRITE)	33
40328	Solid State Video Mapper	93
40333	Airport Surveillance Radar, ASR-8	144
40337	Airport Surveillance Radar, ASR-9	168
40338	ARSR-1/2 FPS Series SSR/DMTI MOD	60
40339	ATCBI-5 Transmiter/Receiver Site	211
40373	DBRITE Maintenance	612
40377	ARSR-3 Military Interface Modification (MIM)	16
40379	Radar Remote Weather Display (RRWD) - Radar S	72
40380	Radar Remote Weather Display (RRWD) - Remote	48
40381	ASDE-3 Hardware Training	56
40382	SSR/DMTI FPS 20 Series	24
40383	Enroute Radar System W/MOD ARSR-1/2	48
40385	ARSR-3 RMM Update	24
40388	ARSR-3 and RMM	16
40389	Radio Communications Link (RCL) System	360
40390	RCL ANMS-Automated Network Management	54
40392	Common Principles for Radar Technicians	160
40406	Computer Hardware Fundamentals	256
40509	Common Principles for Electronic Technicians	320
41112	String-40132/40133	4
41114	String-40114/40132/40133	11
41328	String-42033/42027/42025/42034/42035/42036	42
41329	String-42033/42027/42025/42028/42024/43467/42	10
41339	String-40328/40327	3
41420	String 43004/43497/43501/43539/43540	7
41425	String 43004/43496/43497/43005/43528/43501	6
41432	String 43004/43497	6
42433	String 43005/43528	2
42021	En Route Automated Radar Tracking System (EAR)	2
42024	Interface Buffer Adapter and Generator (IBAG)	2
42025	Continuous Data Recording System (CDR)	12
42027	Data Processing Subsystem (DPS)	12
42028	EARTS Data Acquisition Subsystem (DAS)	2

Table 5-5. Airway Facilities Courses for FY-90 (CONT'D)

Course Number	Course Title	No. of Students FY-90
42033	ARTS IIIA/EARTS Introduction	28
42034	ARTS IIIA Data Acquisition Subsystem (DAS)	18
42035	ARTS IIIA Data Entry Display Subsystem (DEDS)	18
42036	ARTS IIIA System	12
42037	Arts IIIA Software for Technical Personnel	18
42041	ARTS IIA Update	48
42042	ARTS IIA System for Technicians (B.S.)	48
42043	ARTS IIA Software for Technical Personnel	36
42044	ARTS IIA for Supervisors	16
43002	Model 1 Full Capacity System Analysis	12
43004	Tandem Processor Maintenance with Modificatio	5
43005	Model-1 Full Capacity Hardware	52
43006	TMS Workstations Maintenance	12
43020	HSC System Introduction for SPS	12
43021	HCS NAS Monitor and FDP for SPS	12
43022	HCS Diagnostics and Recovery for SPS	12
43023	HCS Radar Data Processing for SPS	12
43047	Host Computer System for Computer Operators	12
43039	HCS Verificatn, configuratin & Problem Resolut	12
43040	Host Computer System for Sys Eng/Asst Sys Eng	36
43042	HCS Enhance Computer Operator Training	9
43043	HCS Hardware Maintenance	27
43416	Computer Update Equipment	16
43417	Data Receiving Group (DRG) & Inter-Fac Data	12
43419	CDC Cue Test Equipment Console	16
43423	CDC Processor	12
43426	CDC Display	32
43441	Computer Display Channel for Engineers	12
43451	CDC Software	16
43467	EARTS Display	6
43472	Central Control & Monitoring System (CCMS)	12
43474	Central Control & Monitoring System (CCMS) OPE	12
43485	Nadin Concentrator Subsystem Hardware (ARTCC)	48
43488	Common Digitizer Model 2A/B/D	108
43492	Common Digitizer Model 2C	24
43496	Tandem T-16 Disc Maintenance	12
43497	Tandem T-16 Tape Drive Maintenance	5
43498	COBOL - Tandem Applications	12

Table 5-5. Airway Facilities Courses for FY-90 (CONT'D)

Course Number	Course Title	No. of Students FY-90
43501	Maintenance Processor Subsystem (MPS) Hardwar	10
43509	Flight Data Input/Output Subsystem, ARTCC	48
43511	MPS Hardware Update Training	24
43512	MPS Software Update Training	12
43515	Computer Display Channel Prgmg & Data Structru	4
43518	Flight Data Input/Output Subsystem, ATCT	256
43519	DARC for Technicians	24
43520	DARC Software	12
43521	Tandem Enform	12
43522	Tandem Pathway	12
43523	IMCS/RMMS/MMS for AF Users	15
43525	Tandem System Management	12
43526	UNIFAX II Goes Receiver/Recorder	18
43529	Data Communications Modems (Paradyne)	348
43531	Advanced (ADA) Programming - Software	24
43532	Host System Familiarization & Basic Assembly	48
43533	IBM 7289 Peripheral Adapter Module (PAM) for	24
43534	NAS Operational Program for Host Tech	60
43535	Host NAS Enroute Operational Program for Engi	48
43537	Data Communications Modem Update (Paradyne)	48
43539	Tandem Sage System (TSS)	12
43540	Tandem 125 IPS Tape Drive	12
47001	(CBI) Troubleshooting Techniques & Safety PRA	28
47002	(CBI) Mathematics for FAA Technical Personnel	173
47004	(CBI) DARC for Engineers	48
47100	(CBI) Radar Remote Weather Display/RRWDS DIGI	17
47101	(CBI) Refresh Prof. RRWDS Processor Display	1
47102	(CBI) Refresh Prof. ICSS	18
47103	(CBI) Refresh Prof 2nd Generation VORTAC Hard	31
47104	(CBI) Paradyne Modem	36
47105	(CBI) Refresh Prof Exide U.P.S.	5
47400	"C" Language Programming	16
47402	(CBI) Fundamentals of Computer Software	236
47404	(CBI) Fundamentals of Computer Data Communica	333
47405	(CBI) COBOL Programming Language	9
47500	(CBI) BUEC System - Remote Site	130
47501	(CBI) BUEC System - ARTCC	18
47502	(CBI) Communications Equipment	219

Table 5-5. Airway Facilities Courses for FY-90 (CONT'D)

Course Number	Course Title	No. of Students FY-90
47505	(CBI) Electronics for FAA Technical Personnel	167
47600	(CBI) Electrical Principles	172
47601	(CBI) MALS/RAIL/REIL	152
47602	(CBI) ALS	46
47603	(CBI) VASI	116
47605	(CBI) Flasher System FA 9989	50
47700	(CBI) Distance Measuring Equipment, FA 9783	123
47701	(CBI) Second Generation VORTAC Hardware	176
47702	(CBI) Localizer - Mark 1 D/E/F	177
47703	(CBI) Glide Slope (Short) - Mark 1 D/E/F	172
47704	(CBI) Mark 1 D/E/F Remote Monitor/Land Lines	171
47705	(CBI) Mark 1 D/E/F ILS Marker Beacon	172
47802	(CBI) Radar Beacon Performance Remote Syst. Mo	97
48000	American Bosch Fuel Injection	16
48001	Woodward Governors	8
48008	Roosa Master Fuel Injection	32
48023	Int'al Power Machines 50/250 KVA PCS (Meter)	6
48024	Int'al Power Machines 50/250 KVA PCS (Solid S	4
48069	Radio Control Equipment (RCE) Maintenance	60
48070	Lecture/Lab Microwave Landing System (Hazelti	72
48072	Arms	36
48094	Distance Measuring Equipment (Butler/Wilcox)	24
48107	Category III ILS	16
48109	Closed Circuit Television (CCTV)	8
48134	ASDE-3 Hardware Training	23
48140	Collins HF Communications Equip Trng for AF T	48
48144	Television Microwave Link Maintenance (TML)	60
48153	Solid State DF and Remote Maintenance Monitor	48
48157	AWOS Equipment Maintenance	36
48167	ICSS Type 3 - DENRO	60
48169	Data Link Processor Hardware Maintenance	10
48176	Wilcox 476B VOR	1
48179	Runway Visual Range (Teledyne)	60
48180	Instrument Landing System (ASI)	30
48181	AWOS	46

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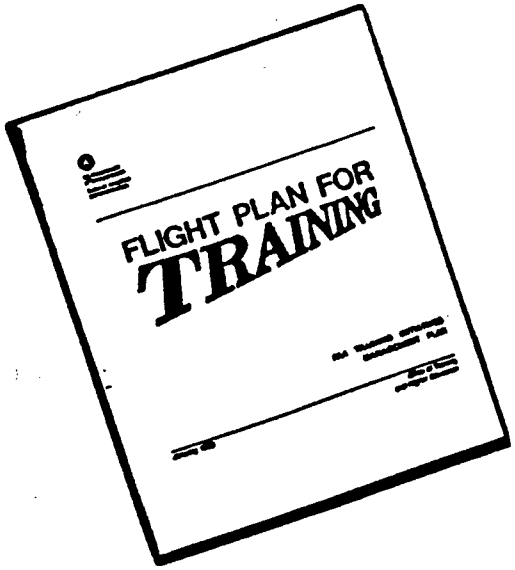
6 FLIGHT PLAN FOR TRAINING

6.1 OVERVIEW

In response to the training studies conducted during 1988, a group of senior representatives from the FAA Academy, the service organizations, and Headquarters, developed the Flight Plan for Training (see Figure 6-1). This group worked continuously during the last half of 1988, developing 18 goals which were the foundation of the plan (Section 6.2). These goals represent a grand design for the future of FAA training and are implemented in eight major training initiatives:

1. Office of Training and Higher Education,
2. Recruitment,
3. Academic and Industrial Ties,
4. Air Traffic Control Screening,
5. Improve On-the-Job Training,
6. Improve Training Curriculum,
7. FAA Academy/Center for Excellence, and
8. Center for Management Development.



- **Future Training Goals**
- **Strategy for Change**
- **Cleared for Take-Off**

Figure 6-1, Flight Plan for Training

These initiatives, which were approved by the FAA Administrator, constitute the cornerstone of a new era in training to meet the challenges of NAS modernization.

The initiatives are to be implemented through 47 discrete projects. This chapter provides the approved outcomes, descriptions, and status for all projects within the eight training initiatives.* Figure 6-2, Timeline for Training Initiatives, provides a GANTT chart of projected milestones.

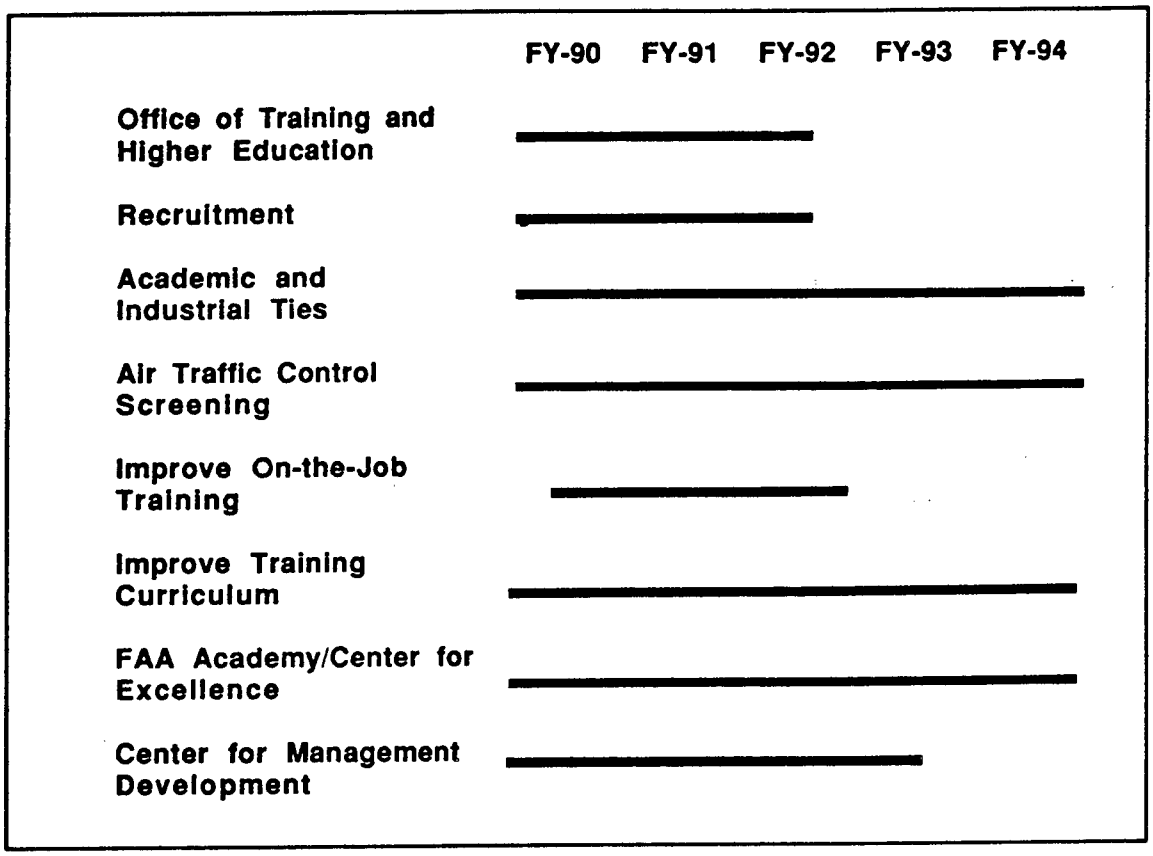


Figure 6-2, Timeline for Training Initiatives

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* The information in Chapter 6 was based on data available in October 1989. If updated information is available, it will be provided in the June 1990 revision of the NAS Training Plan.

6.2 FUTURE TRAINING GOALS

The eight initiatives represent administrative actions needed to fulfill 18 goals for the future, as defined by representatives from the FAA Academy, the Service organizations, and Headquarters. These 18 goals are:

1. Define a clear model for FAA higher education and training.

2. Adopt an agency-wide philosophy that Training is Safety.

3. Establish clear lines of authority and responsibility among all FAA training organizations.

4. Implement a training plan that drives and streamlines the budget process.

5. Provide adequate staffing and funding for all FAA training organizations.

6. Install a Training Management System that effectively tracks training operations and costs and that provides meaningful evaluation of training effectiveness.

7. Optimize the tradeoff between who is hired and what training must be provided -- selectively shift the burden of training to organizations outside the agency.

8. Establish a recruitment system that permits the FAA to successfully compete for the best talent available.

9. Develop managers that value, understand, and manage training as effectively as they deal with technical transitions.

10. Provide training that is both state-of-the-art and cost-efficient.

11. Provide training that works and that employees find interesting and helpful.

12. Develop high levels of skill throughout the FAA workforce.

13. Develop a training system that fully supports operations -- make training available when needed.

14. Reduce the conflict between maintaining operations and conducting training -- minimize and focus the need for on-the-job training.

15. Provide all FAA employees with the training needed to do their job and with training options to transition to new positions.

16. Establish closer ties with others interested in technical training and management development.

17. Establish the FAA as an international model of excellence in aviation training.

18. Attract the best available talent for technical instructor positions.

Further information about each initiative is provided in the sections that follow.

6.3 OFFICE OF TRAINING AND HIGHER EDUCATION

This initiative establishes and maintains an FAA technical training system that provides high quality, timely, and cost-effective training. There are three projects to accomplish this initiative.

6.3.1 Office of Training and Higher Education

OUTCOME: One organization with sufficient visibility, status, and resources to effectively manage FAA training.

DESCRIPTION: Establish an office under the Associate Administrator for Human Resource Management with positions and funding necessary to effectively manage the training programs required to meet the needs of FAA operations. This office directs, coordinates, and controls agency training resources through liaison with the services and the training organizations, academia, and industry, and is approaching full operational capability.

STATUS: Division and staff structure defined and in coordination. Managers and 75% of projected end-of-FY-89 staff on board.

6.3.2 Training Management Information System (TMIS)

OUTCOME: A network training database which provides information needed to manage FAA training.

DESCRIPTION: Design, develop, and implement a database management system for automated collection and reporting of training information. This system will be used by training administrators and managers at all FAA Field Facilities, Regional Offices, the FAA Academy, Center for Management Development, Civil Aeromedical Institute, and Washington Headquarters.

STATUS: Letter Contract for TMIS and Integration/Evaluation of FAA training programs signed.

6.3.3 Integration and Evaluation of FAA Training System Development

OUTCOME: A process that ensures that development activities occur in a meaningful and logical sequence, that no steps are left out of the training development process, that the training implemented will be appropriate for equipment implementation schedules, and that resources are used in the most efficient manner.

DESCRIPTION: This project provides for a contract to monitor project accomplishments and delays, and evaluate development and delivery of new training programs to assure they meet the intended outcomes.

STATUS: Letter Contract for TMIS and Integration/Evaluation of FAA training programs signed.

6.4 RECRUITMENT

The FAA's greatest asset is its people. This initiative assures a steady supply of highly qualified applicants for all occupations by attracting and hiring the most talented individuals available. There are three projects to accomplish this initiative.

6.4.1 National Recruitment Program

OUTCOME: Assure a steady flow of highly skilled, well-qualified applicants for all FAA occupations. Target and aggressively compete for the best talent available.

DESCRIPTION: Establish a nationally focused, funded recruitment program with full-time recruiters to reach highly skilled talented applicants for FAA safety-related occupations.

STATUS: National Recruitment Program "blitz" as a test of new strategies was conducted in the Southwest and New England Regions.

6.4.2 Modular Applicant Testing, Examining, and Screening (MATES) Expansion

OUTCOME: A streamlined hiring process for all aviation safety occupations.

DESCRIPTION: Due to revised qualification standards for aviation safety inspectors and centralized applicant registers for flight test pilots and engineers, the FAA is streamlining the pre-employment process. This project requires hardware acquisition and software development to allow computer-scanned applications for positions in the above occupations. As a result, the FAA will be able to expedite establishment of a list of rated and ranked applicants for consideration.

STATUS: MATES implemented for Air Traffic Controllers, shortening the hiring process from 18 months to 45 days. Established Recruitment Oversight Committee composed of representatives from AHR, Civil Rights, Public Affairs, Aviation Regulatory, Systems Maintenance, and Air Traffic. National Implementation of Management Information System will begin by January 1990. Currently being field tested in Great Lakes and New England Regions. Contractor-developed standardized rating, ranking, and evaluation criteria for selection of full-time recruiters has been delivered.

6.4.3 Airway Facilities Occupation Study

OUTCOME: Change AF occupational classification and qualifications.

DESCRIPTION: The identification of skills required to repair and maintain the equipment of the future is based on a job task analysis. This analysis leads to revised classification, qualification, and recruitment for the future Airway Facilities work force. The analysis will be used to support the Airway Facilities curriculum modernization described in Section 6.8.3.

STATUS: One year behind schedule.

6.5 ACADEMIC AND INDUSTRIAL TIES

This initiative allows the FAA to enter into a new era of close communication and coordination with academic and industrial communities to meet the agency's human resource challenges. There are four projects to accomplish this initiative.

6.5.1 Pre-Hire ATC Training

OUTCOME: A new source of highly qualified and motivated air traffic control specialists.

DESCRIPTION: The academic community provides pre-hire training in the air traffic control occupation, allowing the FAA to assign the new hire to advanced FAA Academy or field training.

STATUS: Procurement documents have been produced for contract with Hampton University to develop pre-hire ATC training.

6.5.2 Cooperative Education Program

OUTCOME: Expand Cooperative Education Programs.

DESCRIPTION: Establishment of Program Manager with responsibility for liaison to technical and vocational schools and colleges with the goal of attracting the best talent available into the work force. One goal of the project is the creation of a central pool of co-op positions which managers can use to meet their staff needs without drawing against their staffing allotments.

STATUS: No positions have been made available to support expansion.

6.5.3 Symposia for State-Of-The-Art Technical Training

OUTCOME: Symposia for the free exchange of information on state-of-the-art training, resulting in published recommendations.

DESCRIPTION: Training symposia facilitate information exchange between the aviation community, vendors, colleges and universities. Topics for these symposia will include the latest innovations in simulation, interactive instructional techniques, and strategies for future views of technical training. Proceedings of these symposia are available to the FAA training community. First symposium conducted in December 1988. AHT is initiating a Speaker Series for mid-level managers and their staffs. The seminars will be co-hosted with ADM-1 and offered under the auspices of the Graduate-Level Research and Education in Aviation Technology (GREAT) Program as a follow-up to the Senior Executive Series. The Speaker Series will include managing technological change, but focus more on new science/engineering technologies and their application to aviation.

STATUS: Second annual symposium scheduled for Summer 1990. First "Speaker Series" presentation was held in November 1989.

6.5.4 Training at Universities and Colleges

OUTCOME: New curricula at universities and colleges to provide initial and proficiency training for safety-related occupations.

DESCRIPTION: University-developed courses provide training specific to the Air Traffic and Airway Facilities services. Airway Science curricula has been revised to attract more students to the FAA. The Cooperative Education programs with colleges in the Regions and Centers is continuing.

STATUS: Delayed.

6.6 AIR TRAFFIC CONTROL SCREENING

The goal of this initiative is to separate screening from training, so that the FAA hires only those applicants who can successfully complete training.

OUTCOME: A pre-hire ATCS screening procedure that takes less than 5 days to administer and effectively replaces the current FAA Academy screening program.

DESCRIPTION: Research, develop, prototype, and validate a new, short, pre-hire ATCS screen that improves prediction of training success and reduces adverse impact.

STATUS: Initial deliverables for Phase A of the screen revision project are being reviewed. Procurement documents to initiate Phase B of the project are being prepared. Phase B Statement of Work under review by OPM.

6.7 IMPROVE ON-THE-JOB TRAINING

This initiative will ensure that OJT instructors possess the highest qualifications, and will provide for high-quality OJT instructional materials in all occupations.

6.7.1 Air Traffic On-The-Job Instructor Training

OUTCOME: An on-the-job training program that provides the developmental air traffic control specialist with the best instruction and learning experiences possible.

DESCRIPTION: This program improves selection, training, evaluation, and certification of Air Traffic on-the-job training instructors/examiners. The goal is to select those controllers that have the potential to be excellent OJT instructors and assist

them in attaining that goal. This program leads to a more standardized OJT and certification process.

STATUS: Phase 1 ATC OJT program on-going with new instructor and examiner courses currently being delivered. Enhancement of Air Traffic OJT Order complete.

6.7.2 Airway Facilities On-the-Job Training

OUTCOME: OJT instructor course development, instructor selection and training, and field implementation.

DESCRIPTION: This program improves selection and training of Airway Facilities on-the-job instructors and upgrades instructional material for all existing and new NAS Plan programs.

The goal is to select and train a minimum of two OJT instructors per regional sector. This program leads to a more standardized OJT process.

STATUS: Delayed (schedule to be determined).

6.7.3 AVS On-The-Job Training

The FAA will improve the selection and training for Flight Standards OJT instructors through these projects.

6.7.3.1 Flight Standards On-the-Job Training

OUTCOME: A standardized on-the-job training program that provides for the development of Aviation Safety Inspectors using the best instructional and learning experience possible.

DESCRIPTION: This program improves selection and training for Flight Standards OJT instructors. It standardizes the delivery of OJT and develops certification procedures, when applicable, based on the Project SAFE (Safety Analysis Functional Evaluation) job task analysis.

STATUS: Draft Flight Standards OJT Order released for comments.

6.7.3.2 Aircraft Certification On-the-Job Training

OUTCOME: A standardized on-the-job training program that provides for the development of instructors for aircraft certification using the best instructional and learning experience possible.

DESCRIPTION: This program improves selection and training for aircraft certification OJT instructors. It standardizes the delivery of OJT based on the Project SMART job task analysis.

STATUS: Skills/needs analysis for OJT in Aircraft Certification complete.

6.7.3.3 Security On-the-Job Training

OUTCOME: A standardized on-the-job training program that provides for the development of Civil Aviation Security Specialists using the best instructional and learning experience possible.

DESCRIPTION: This program improves selection and training for OJT instructors. It standardizes the delivery of OJT for Civil Aviation Security Specialists.

STATUS: Behind schedule, awaiting funding.

6.7.3.4 Aviation Medicine On-the-Job Training

OUTCOME: A standardized on-the-job training program that provides for the development of instructors for professionals and para-professionals in Aviation Medicine using the best instructional and learning experience possible.

DESCRIPTION: This program improves selection and training for Aviation Medicine OJT instructors. It standardizes the delivery of OJT based on a proposed job task analysis.

STATUS: Behind schedule, pending completion of JTA.

6.8 IMPROVE TRAINING CURRICULA

With this initiative, the FAA will completely overhaul the training curricula for all safety-related occupations. Curricula will be designed to reduce the training burden placed on operations. There are 14 projects associated with this initiative.

6.8.1 Curriculum to Train Facility Managers, Training Administrators, and Evaluators

OUTCOME: Those who manage, administer, and evaluate training at all levels are trained to have a better understanding of their role in training and the knowledge necessary to deliver and maintain a quality training program.

DESCRIPTION: A curriculum for those who manage, administer, and evaluate training at all levels of the organization.

STATUS: Training proposal and training plan developed. Facility Managers and Training Program Managers courses are on schedule (14 of 24 lessons completed).

6.8.2 Air Traffic Curricula

The FAA will better prepare Air Traffic Control developmentals to begin the OJT process and reduce the dependence on live-traffic OJT.

6.8.2.1 Short-term ATC Curriculum Enhancements

OUTCOME: Expanded simulation capacity and shortened training time while making more site-specific training available at the Radar Training Facility for En Route and expanding fundamental Terminal training at the FAA Academy. Separating training progression from grade progression, which reduces training lag times.

DESCRIPTION: In the En Route option, offload A-side functions to Air Traffic Assistants (ATAs), who are no longer required to have pilot/ATC backgrounds. Reduce A-side coverage time for developmentals, and teach more fundamentals at the FAA Academy. Expand FAA Academy and field simulation capacity and simulation training time. Remove the RTF requirement and reprogram the RTF capacity for more site-specific training for facilities most in need. In terminal, expand fundamentals training at the FAA Academy so that developmentals are nearly ready for OJT upon entering the facility (especially for Level I/II towers). For both options, separate training from ties to grade progression to allow developmentals to reach full performance level without artificial time lags.

STATUS: Six months behind schedule.

6.8.2.2 Air Traffic Control Curricula Redesign

OUTCOME: Redesign ATC curriculum for training to higher skill levels in a shorter time frame, with less dependence on live-traffic OJT.

DESCRIPTION: A redesign of ATC curricula based on cognitive task analyses that identify controllers' thought processes and behaviors. These analyses identify optimal ways to present information and sequence lessons, and to guide the new curriculum development. The training will systematically develop the

thought processes and skills used in ATC. At the same time, the curricula are redesigned to allow the flexibility required to transition to future systems.

STATUS: Course Design Guide for Terminal Tower Cab being developed with curriculum development scheduled to begin December 1989. Analysis necessary for decision on curricula redesign strategy completed. JTAs for Tower Cab and TRACON on schedule.

6.8.2.3 Air Traffic Proficiency Training

OUTCOME: Quality proficiency training that addresses human factors needs in conjunction with technical requirements for the Air Traffic full performance level work force.

DESCRIPTION: Establish a core proficiency training program based upon existing needs. Enhance the proficiency courses following the cognitive task analyses and redesign of the developmental curriculum.

STATUS: One year behind schedule.

6.8.2.4 Radar Training Centers

OUTCOME: Radar air traffic control concepts and high-fidelity simulation training are provided to developmentals at Radar Training Centers (RTCs). The project allows managers to offload much of the training requirement from an en route or TRACON facility. Use of these facilities results in ATCS developmentals requiring less time to check out in operational positions.

DESCRIPTION: Establish Radar Training Centers in several locations throughout the country that will provide site-specific high- and low-fidelity radar simulation training for en route facilities and TRACONs.

STATUS: Project being cancelled. Will delete in 6/90 update.

6.8.3 Airway Facilities Curriculum

These projects will improve the curriculum for Airway Facilities training.

6.8.3.1 Implement Training for Airway Facilities New Hires

OUTCOME: Establish training for newly-hired Electronics Technicians to ensure they have the needed skills to succeed in equipment courses.

DESCRIPTION: The establishment of a path through the various training courses offered by the FAA Academy will ensure that all new hires enter specialized equipment courses at the same basic knowledge level. This will enable courseware for follow-up courses to be structured from that level.

STATUS: Training for new hires implemented in FY-89. Four AF proficiency courses developed by FAA Academy this year. Additional CBI terminals provided to AF field sites to increase new hire training capacity. New hire CBI training laboratory complete. Resident common principles training in operation, at full capacity.

6.8.3.2 Airway Facilities Proficiency Training

OUTCOME: Refresher/proficiency training on all NAS plan projects, 5 years after implementation of training.

DESCRIPTION: Development of new service policies and new training programs to make Airway Facilities proficiency training a reality. This includes a program to ensure availability of sufficient courseware.

STATUS: On track.

6.8.3.3 Prepare for Implementation of Modernization Study

OUTCOME: An Airway Facilities office at the FAA Academy with direct responsibility and oversight for the implementation of the modernization study results. The office will establish its charter, hire Instructional Systems Design specialists, and investigate potential contractors to perform the modernization work.

DESCRIPTION: Establish an Airway Facilities Office at the FAA Academy with direct responsibility for ensuring technical accuracy of the Airway Facilities modernization study and its integration into the NAS Plan training program.

STATUS: On track.

6.8.3.4 Airway Facilities Curricula Modernization Study

OUTCOME: Modernized Airway Facilities training curricula aligned with the NAS Plan programs.

DESCRIPTION: Undertake a complete appraisal of the current AF curricula based on meeting the training challenges of the new NAS systems and the newly identified AF work force tasks.

STATUS: On track. Initial work on a management plan is going forward.

6.8.3.5 Modernize Airway Facilities Curricula

OUTCOME: A modern curricula for all Airway Facilities training course utilizing appropriate methodology and training techniques.

DESCRIPTION: Completely overhaul the AF training curricula based on the results of the AF modernization study.

STATUS: Delay projected.

6.8.4 Aviation Standards Curricula

These projects will improve the Aviation Standards training curriculum.

6.8.4.1 Flight Standards Curricula Redesign

OUTCOME: Redesign Flight Standards curricula based on Project SAFE job task analysis.

DESCRIPTION: This project achieves a professionally-trained Aviation Safety Inspector in the operations, avionics, and airworthiness specialties quickly and cost-effectively. Establish a training program that combines the latest training technology and instructional systems, using an integrated approach.

STATUS: Flight Standards course revisions required by Project SAFE have been identified, and training modules for communications and conflict resolution have been completed, prototyped, and delivered. Eighty per cent of the 200 required Flight Standards Handbook chapters have been released.

6.8.4.2 Aircraft Certification Curricula Redesign

OUTCOME: Redesigned Aircraft Certification curricula based on Project SMART job task analysis.

DESCRIPTION: This project achieves professionally trained engineers, flight test pilots/engineers, and Aviation Safety Inspectors (manufacturing).

STATUS: Training plan to satisfy Project SMART for Aircraft Certification due to be completed by the end of the fiscal year.

Memorandum of Understanding for Project SMART responsibilities has been signed by AHT and the Aircraft Certification Service (AIR).

6.8.4.3 Civil Aviation Security Curricula Redesign

OUTCOME: Redesign Civil Aviation Security curricula based on Project SECURE's job task analysis.

DESCRIPTION: This achieves a professionally-trained Aviation Security Agent by establishing a training plan that combines the latest in state-of-the-art design, development, and implementation of training methodologies.

STATUS: Five of six Civil Aviation Security courses have been developed.

6.8.4.4 Aviation Medicine Curricula

OUTCOME: Develop training for the Office of Aviation Medicine.

DESCRIPTION: Develop a training program which is based upon a task analysis for the entire Office of Aviation Medicine. This analysis will address both the professional and para-professional work force. The objective is to identify training required of newly-hired flight surgeons; resident training required to perform the inherent job functions; and identify training required of ancillary/supporting professions.

STATUS: Six months behind schedule.

6.9 FAA ACADEMY / CENTER OF EXCELLENCE

The centerpiece of the agency's upgraded training efforts will be the FAA Academy. This initiative will establish the FAA Academy as the worldwide Center of Excellence in aviation training. There are eight projects to accomplish this initiative.

6.9.1 FAA Academy Initiative Implementation Plan

OUTCOME: An FAA Academy plan to manage all elements of the Administrator's Initiatives Program impacting the FAA Academy.

DESCRIPTION: The FAA Academy develops a plan outlining specific projects and actions to support the Administrator's training initiatives. Resulting projects and actions prepare the FAA Academy for technical training requirements of the 1990's. The plan is updated on a quarterly basis and extends five years into

the future. An FAA Academy team is charged with preparing the details for all FAA Academy projects otherwise identified during the initiatives planning process.

STATUS: Implementation plan for all FAA Academy initiatives complete and updated quarterly.

6.9.2 Instructional Expertise

OUTCOME: An FAA Academy instructor work force with the necessary skills to train students in the modernized FAA curricula.

DESCRIPTION: Establishes new training curricula for FAA Academy instructors to ensure that instructors have the skills needed for the modernized curricula. Determines the new skills required by FAA Academy instructors, and develops a training program to enhance existing skills and support new skill requirements.

STATUS: Academy job function analysis complete.

6.9.3 State-of-the-Art Equipment and Facilities at FAA Academy

OUTCOME: Improved quality of training at the FAA Academy by providing new classrooms with advanced technology, upgrading existing classrooms and laboratories, and adding high-fidelity simulation systems.

DESCRIPTION: The FAA Academy becomes a Center of Excellence in instruction by adding and upgrading classrooms and using state-of-the-art instructional methodologies and equipment. Maximum use is made of advanced technology and high fidelity simulation systems.

STATUS: Three advanced technology classrooms complete with two more near completion. Plan for aircraft and aircraft simulator acquisitions developed, and Facilities and Equipment (F&E) funding requirements submitted. Computer-driven control tower simulator under contract development with delivery scheduled for late 1990. Over 1000 site specific radar training simulations designed for Los Angeles, Oakland, and Chicago Centers. RTF facility expansion complete. Phase 1 (initial design) of Academy Training Development System (ATDS) complete.

6.9.4 Training Procurement Process Streamlining

OUTCOME: More efficient and effective procurement of training and training support through contracting.

DESCRIPTION: A procedure is developed to reduce the steps required when procuring training or training support.

STATUS: On track.

6.9.5 Advanced Training Design, Development, and Delivery

OUTCOME: Utilization of advanced training techniques to meet training needs more efficiently, including the addition of Instructional Systems Design specialists.

DESCRIPTION: The FAA Academy makes use of computer technology and modern instructional systems design techniques to make FAA training more effective and efficient. Instructional Systems Design specialist positions are designed and filled to enhance training development.

STATUS: Delayed (schedule to be determined).

6.9.6 Training Technology Procurement

OUTCOME: The FAA Academy Airway Facilities Branch's modernized curricula include the use of the latest training technologies.

DESCRIPTION: Various training technologies are investigated. Based upon curricula modernization studies, a plan is developed to implement those technologies appropriate to the new Airway Facilities curricula. The necessary training technology equipment is purchased.

STATUS: Delayed, pending JTA and curriculum modernization study.

6.9.7 Quality Assurance and Instructor Productivity Improvements

OUTCOME: FAA Academy instructors can spend a greater percentage of their time in student/instructor contact. All FAA Academy courses are reviewed and, where needed, brought up to FAA Academy standards.

DESCRIPTION: The FAA Academy establishes procedures for monitoring and improving the quality of training through the use of enhanced evaluation techniques. Projects are undertaken to increase instructor classroom availability.

STATUS: Delayed (schedule to be determined).

6.9.8 FAA Academy Instructor Incentives

OUTCOME: Recommendations for improving recruitment, retention, and quality of FAA Academy instructors.

DESCRIPTION: Occupational review of FAA Academy instructor positions designed to ascertain problems in the career field, to improve recruitment sources, to assure instructor quality, to improve retention, to provide for continued career field proficiency, and to guarantee successful re-entry into the FAA Academy instructor career field for individuals who accept FAA Academy instructor assignments.

STATUS: Action plan developed for implementation in FY 1990.

6.10 CENTER FOR MANAGEMENT DEVELOPMENT

This last initiative will sustain development of the management resource required to transition the FAA workforce to the new technologies of the '90s. There are eight projects to accomplish this initiative. Seven of the eight CMD initiatives are underway.

6.10.1 On-the-Job Development of FAA Managers

OUTCOME: A plan to improve on-the-job development of FAA Managers.

DESCRIPTION: Develop and implement a formally structured program for FAA managers which increases retention of formal training and builds skill in applying training on the job.

STATUS: The FAA has completely revised the curriculum for the initial first-level supervisory course and is in the process of revising the follow-on course and the manager's course.

6.10.2 FAA Conference/Training Center for Managers

OUTCOME: FAA Conference Center Concept Evaluated

DESCRIPTION: Develop alternatives for establishment of an FAA Conference Center and test one approach.

STATUS: Survey of existing conference facilities in progress. Pilot test of FAA Conference Center for Managers concept conducted August 1989 in Tempe, AZ. Pilot project underway to test concept of OJT development for FAA managers.

6.10.3 Innovative Technologies for the Delivery of CMD Training

OUTCOME: Addition of new technology to CMD training.

DESCRIPTION: Evaluate available techniques for management development. This will improve CMD training for more cost-effective and efficient delivery systems.

STATUS: On track.

6.10.4 Career Planning Seminars

OUTCOME: Career planning seminars for FAA employees.

DESCRIPTION: Analyze employee career planning training needs, design training to meet needs, and begin training delivery.

STATUS: No activity.

6.10.5 Develop Relationships with Industry and Academic Communities

OUTCOME: External contacts with colleges and industry that incorporate state-of-the-art approaches to FAA management training curricula and processes.

DESCRIPTION: Identify leading edge college and industry management training and incorporate approaches in FAA curricula; utilize consultants to work on management development challenges and serve as guest speakers and lecturers.

STATUS: Contract deliverables received in October 1989 from project to research alternate technologies in use in leading education/training institutions. Next phase of the project still pending, due to funding levels.

6.10.6 CMD Curricula Review

OUTCOME: Criteria for CMD curricula evaluation and action plan for revision.

DESCRIPTION: All curricula are evaluated and action plans developed for course revision.

STATUS: On track.

6.10.7 Strategic Planning Session for FAA Management Development

OUTCOME: An action plan for the future state of FAA Management Development.

DESCRIPTION: Management Development Review Committee reviews present state, formulates vision of the future state (5 years hence), and establishes broad initiatives to achieve the future state.

STATUS: On track. Strategic Plan had been developed and is underway.

6.10.8 Management Development Consortia

OUTCOME: Increase awareness and use of new approaches to management development.

DESCRIPTION: Attend at least two meetings per year of a management development consortium where advanced training concepts are presented and discussed. Present information on FAA Management Development Initiatives at one meeting.

STATUS: One year behind schedule.

7 FAA TRAINING SUMMARY

7.1 OVERVIEW - VISION TO THE FUTURE - 1994

The purpose of this section is to provide a view of NAS training five years into the future (see Figure 7-1, FAA Training - 1994). As with any evolving system, some things five years out will have changed and other will have remained much as they are today. Some objectives of the FAA training program will have been met and others will have fallen by the wayside. No one has perfect vision into the future, but FAA training is a system, and systems generally evolve purposefully. It is with this knowledge that we look to the future and make some judgments as to what will and will not have happened to FAA training. The goal is to provide the FAA training community with a plan, a plan which guides, a plan which captures ideas, a plan which is directive, a plan which documents progress, and most importantly a plan which stimulates thought.

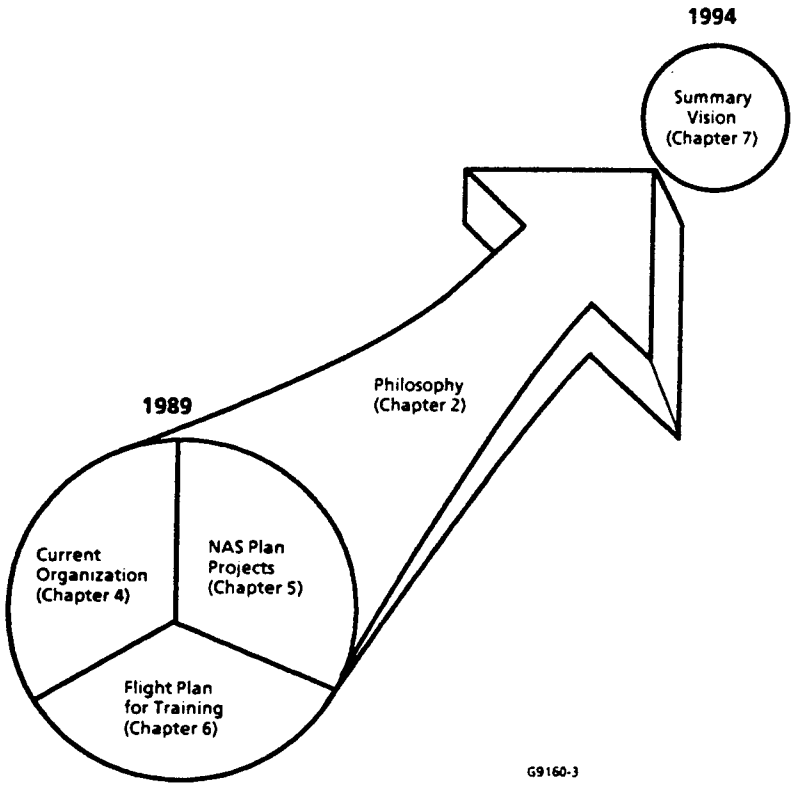

Figure 7-1, FAA Training - 1994

7.2 NAS TRAINING PLAN - ORGANIZED TO PROJECT FUTURE

This revision to the NAS Training Plan is organized to capture three important aspects of the FAA training system such that they directly support a 1994 vision of the FAA Training system.

Chapter 4 describes the current training organization, its function and operation. Chapter 5 describes NAS projects coming on line in the next five years and Chapter 6 provides the status for the initiatives from the Flight Plan for Training. Given these three pieces of the puzzle (current organization, NAS projects, and Flight Plan Initiatives) and by adding the philosophy discussed in Chapter 2, projections about the training system are made (see Figure 7-1, FAA Training - 1994). The remainder of this chapter deals with those projections.

7.3 1994 MANAGEMENT OF FAA TRAINING

The general tendency of FAA training management is toward

stronger centralized direction and decentralized implementation of the FAA training program. Future training will be based on adult learning models separately tailored for management and technical training tasks (the NAS training plan's deals primarily with AF & AT technical training).

At headquarters, the focus will remain on requirements, planning, budgeting, and program management. The FAA Academy will be the operational arm of the technical training community and the region/field will focus on training implementation. Details of the expected future operation of each of these training community entities is discussed in the following sections.

7.3.1 Headquarters 1994 - An Evolving Role

First of the Flight Plan for Training initiatives to be implemented was the establishment of the Office of Higher Education and Training (AHT). As that office continues to be staffed,

AHT will play a larger role in the planning, budgeting, and evaluation of training program development.

AHT will also continue to develop training policy and standards to guide the entire agency program. By 1994, AHT will have fully implemented planning tools to project student pipeline requirements and their attendant budget requirements.

ASM-210 and AAT-14 will focus on training program requirements definition and evaluation of training effectiveness.

For ASM, future training requirements will be oriented to more automation including remote monitoring and system's analysis. For AAT, training requirements will also be oriented to more automation, especially as the Advanced Automation System comes on line. Improvements in headquarters training program management will dovetail with a streamlined recruitment, screening, and hiring process. Together, all of these initiatives will lead to stronger centralized direction of the training system and more of a customer service orientation for headquarters training offices.

7.3.2 FAA Academy - Center for Operational Excellence - 1994

In five years, the FAA Academy will still teach a number of the courses which are being taught today, but the way that the FAA Academy functions and accomplishes its mission will have changed in several important areas. One area in which advances will have been realized is in recruitment, indoctrination, and retention of quality instructors.

Advances will also have been realized in the areas of automated courseware development, classroom automation, and simulation.

Simulator improvements will include part-task trainers, full-task trainers, and mission simulators (specifications for such devices are already under development and in some cases, contracts have been let).

Training for COTR functions will have been expanded and staff adjusted to accomplish required tasking.

In the Air Traffic area, the move will be away from screening tasks and more to basic controller training. Extensions in the en route and terminal basic training programs are anticipated. In the AF area, training will continue to focus on hands-on LRU repair and the implementation of remote monitoring functions. Component level repair training will be provided to selected instructor and depot personnel. The FAA Academy will retain and expand its preeminent role as the operational arm of the FAA Training Community charged with resident instruction, Training COTR, technology implementation, revision/development, and correspondence course functions.

7.3.3 Region/Field Implementation - 1994

Future emphasis for the field will be to implement the training programs developed under headquarters and FAA Academy direction.

> *Regional office and facility personnel will continue to face significant challenges in planning and implementing new equipment training programs.*

Data in the NAS Training Plan and from other sources will continue to ease the task. In the early 1990s, the burden of new hire AF and developmental AT training will continue to fall on the field facilities (in the AF case, the FAA Academy will provide relief). As initiatives to change the AT and AF curriculum come on-line, the field can expect to begin receiving a more highly trained, more automation oriented trainee.

> *In the case of AF, the trainees will be able to monitor and diagnose system problems and in the case of AT, the OJT phase of training will be shorter.*

Also in the AT area, most training will take place off the control room floor. Regional Training Centers will be used to instruct basic FAA Academy graduates in field facility operations and procedures in a simulation environment. The OJT program will be subject to more rigorous controls and evaluation.

> *A primary facility training task will be to conduct and monitor an automated refresher training program.*

7.3.4 Training Management Information System

> *Key to the future success of the FAA training system is the implementation of a Training Management Information System, one of the Flight Plan for Training Initiatives (see Chapter 6 and Section 7.4).*

Coupled with the initiative to produce an automated training development system, this TMIS will tie the training community together in a way not previously possible (see Figure 7.2, 1994 FAA Training System). Literally for the first time, headquarters, the FAA Academy, regional offices, and field facilities will be tied together in an information management sense. TMIS will provide logical flow of near real-time program, student, courseware, and training system information. Facilities will be able to submit training requirements as quickly as staffing, schedules and equipment change. The FAA Academy will be able to notify a range of facilities when a cadre course becomes available or query all CBI users on the utilization of a particular lesson. Headquarters will be able to create a training proposal on-line and quickly respond to budget what-if exercises.

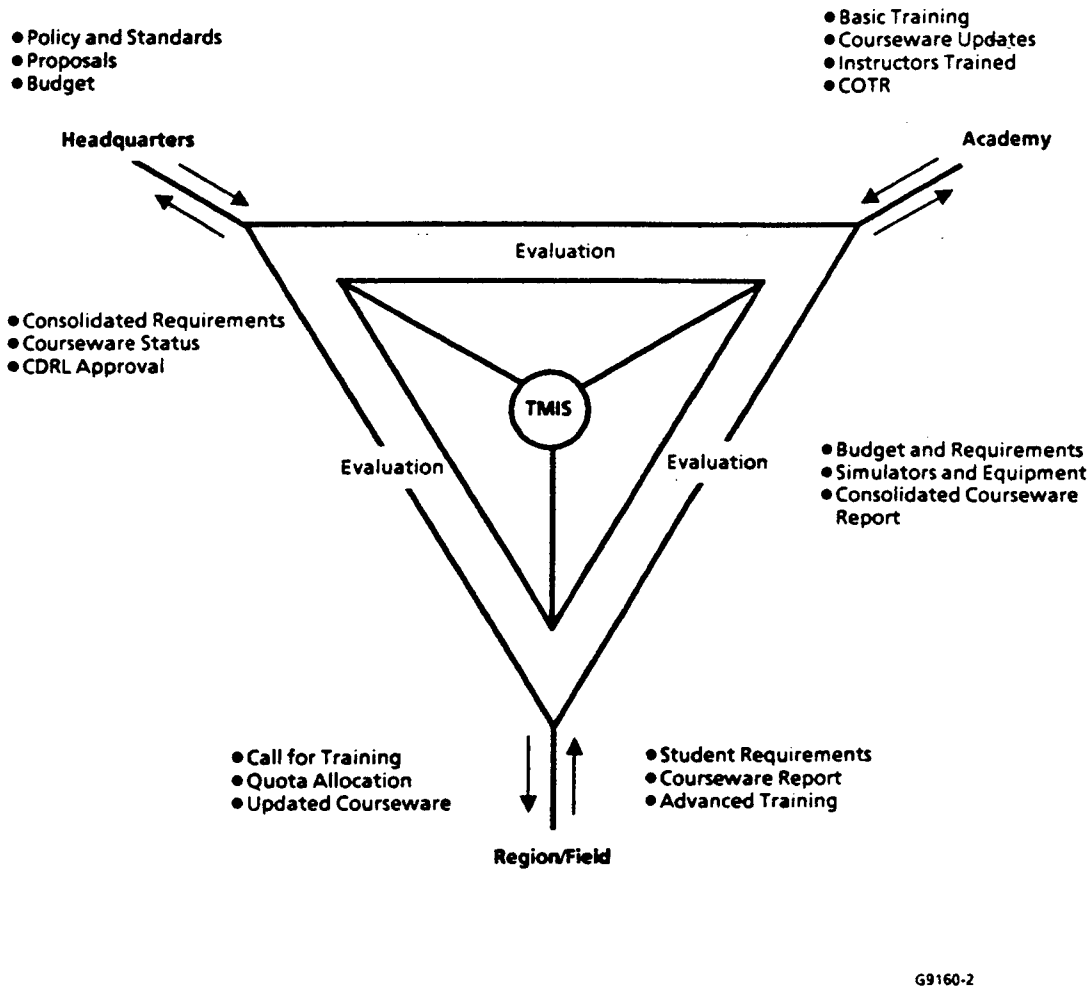

Figure 7-2, 1994 FAA Training System

Combined with fundamental organizational changes, TMIS implementation will enhance the quality and efficiency of the FAA training system.

7.4 BROWN BOOK PROGRAMS - 1989 TO 1994

Over the next five years, over 50 new subsystems will be integrated into the NAS. This section describe the types of equipment being delivered and how that equipment affects the training system. AAS is the largest of the NAS Plan projects and it also will have the greatest impact on operations and training.

Although the AAS is divided into several phases, the largest training impacts are in the ISSS and TCCC phases.

In ISSS, the primary task will be console operations training for controllers and in TCCC, the challenge will be in automation training. TAAS phase training for controllers will also be significant because basic job functions will change. Traffic Management System and its phased implementation will also be a significant AT training task. In the Flight Service area, DF modernization and the continued consolidation inherent in FSAS have the potential for significant training loads.

A series of radar installation/improvement programs including ASR-9, leapfrog, ASR-7&8, LRR, ASDE-3, ISP and TDWR will significantly increase conventional AF training requirements, while at the same time, the challenges of RMM and MCC will require transition to and training in new maintenance procedures.

For AF, all of this training will be taking place as a large number of fully qualified technicians retire and an influx of new hires are trained.

7.5 "FLIGHT PLAN" TAKES OFF

Many of the Flight Plan for Training initiatives have already been discussed in detail and the importance of each in realizing enhancements to the current training system cannot be overemphasized. However, just a few of the initiatives directly affect the core of the training organization and its function. Stated another way, failure of some key initiatives to succeed without attendant new initiatives to take their place could cause severe problems with future system operation.

These key initiatives include the AT & AF curriculum revisions, the AF classification and qualification initiative, the AT screen initiative, and improvements planned to OJT programs.

Though not key, implementation of a effective refresher training program, development of Radar Training Centers, and the initiative to further develop academic sources of qualified and motivated personnel are also important to the future FAA training system.

7.6 VISION - THE 1994 FAA TRAINING SYSTEM

The FAA training system five years in the future will be a more robust and effective system. Control is better from top to bottom, but at the same time, the system will be more responsive to the needs of its customers, the FAA employees. As depicted in Figure 7-2, the system consists of three entities tied together by an extensive and responsive TMIS. Headquarters requirements and planning functions are effectively accomplished in near real-time. FAA Academy operations include timely update of courseware, more extensive basic training of the technical workforce, and courseware performance monitoring. Regions and facilities conduct advanced training through a combination of traditional media, OJT, and a vigorous refresher program.

Finally, a comprehensive evaluation program operates at all levels of the training system, not just to see that the training is ultimately effective (as measured on the job), but also to see that training system operates efficiently and with the least disruption of on-going operation.

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APPENDIX A

ACRONYM LIST

Acronym List

A

AAS	Advanced Automation System
AATS	Advanced Automation Training System
ACCC	Area Control Computer Complex
ACF	Area Control Facility
ADAS	AWOS Data Acquisition System
ADL	Aeronautical Data Link
AF	Airway Facilities
AFS	Airway Facilities Sector
AFSFO	AFS Field Office
AFSS	Automated Flight Service Station
A/G	Air to Ground
AHR	Administrator for Human Resources
AHT	Office of Training and Higher Education
AIR	Aircraft Certification Service
ALG	Acquisition and Contracting
AMT	Assistant Manager for Training
ANMS	Automatic Network Management System
ARMS	Airport Remote Monitoring System
ARSR	Air Route Surveillance Radar
ARTCC	Air Route Traffic Control Center
ARTS	Automated Radar Terminal Systems
ASD	Aircraft Situation Display
ASDE	Airport Surface Detection Equipment Radar
ASOS	Automated Surface Observing System
ASR	Airport Surveillance Radars
AT	Air Traffic
ATA	Air Traffic Assistant
ATC	Air Traffic Control/Controller
ATCS	Air Traffic Control Specialists
ATCT	Air Traffic Control Tower
ATDS	Academy Training Development System
ATIS	Automatic Terminal Information Service
ATMS	Automated Training Management System
AVS	Aviation Standards
AWOS	Automated Weather Observing System
AWP	Western Pacific (FAA regional routing symbol)

B

BRITE	see DBRITE

C

CAI	Computer Assisted Instruction
CAMI	Civil Aeromedical Institute
CBI	Computer Based Instruction
CD	Common Digitizer
CDRL	Contract Data Requirements List
CFCF	Central Flow Control Facility
CHI	Computer-Human-Interface
CHURPS	Computer Aided Human Resource Planning System
CMD	Center for Management Development
CO	Contracting Officer
CONUS	Continental United States
COTR	Contracting Officer's Technical Representative
CPMIS	Consolidated Personnel Management Information System
CRA	Conflict Resolution Advisory
CUE	Computer Update Equipment
CWP	Central Weather Processor

D

DARC	Direct Access Radar Channel
DBRITE	Digital Bright Radar Indicator Tower Equipment
DCT	Detached Console Trainer
DF	Direction Finder
DID	Data Item Description
DLP	Data Link Processor
DME	Distance Measuring Equipment
DMTI	Digital Moving Target Indicator
DOD	Department of Defense
DPA	Delegated Procurement Authority
DRG	Data Receiver Group
DSP	Departure Sequencing
DYSIM	Dynamic Simulators

E

EARTS	Enroute ARTS

F

FAA	Federal Aviation Administration
FAAAC	FAA Academy
FAATC	FAA Technical Center

FDEP	Flight Data Entry and Printout
FDIO	Flight Data Input/Output
F&E	Facilities and Equipment
FPL	Full Performance Level
FPS	Fixed Pulse System
FSAS	Flight Service Automation System
FSDPS	Flight Service Data Processing Systems
FSP	Flight Strip Printer
FSS	Flight Service Station
FY	Fiscal Year

G

GNAS	General NAS
GREAT	Graduate-Level Research and Education in Aviation Technology
GSA	General Services Administration

H

HCVR	High Capacity Voice Recorder
HF	High Frequency
HIWAS	Hazardous In-Flight Weather Advisory Service
HRDO	Human Resource Development Officer

I

IADS	Interactive Instructional Delivery System
ICSS	Integrated Communications Switching System
IFR	Instrument Flight Rules
IIDS	Interactive Instructional Delivery System
ILS	Instrument Landing System
ILS	Integrated Logistics Support
ILSP	Integrated Logistics Support Plan
I/O	Input/Output
IOC	Initial Operating Capability
ISD	Instructional Systems Development
ISSS	Initial Sector Suite System

J

JTA	Job Task Analysis

L

LCN	Local Communications Network
LLWAS	Low Level Wind Shear Alert System
LORAN	Long Range Navigation
LRR	Long Range Radar
LRU	Line Replaceable Unit
LSA	Logistics Support Analysis
LSAR	Logistics Support Analysis Record

M

MALSR	Medium-intensity Approach Lighting with Runway Alignment Indicator Lights
MATES	Modular Applicant Testing, Examining, and Screening
MCC	Maintenance Control Center
MIS	Management Information System
MLS	Microwave Landing System
MMAC	Mike Monroney Aeronautical Center
MPS	Maintenance Processing System
MWP	Meterological Weather Processor

N

NADIN	National Airspace Data Interchange Network
NAILS	National Airspace Integrated Logistics Support
NARACS	National Radio Communication System
NAS	National Airspace System
NATCOM	National Communications Center
NAVAIDS	Navigational Aids
NAWP	National Aviation Weather Processor
NCC	Network Control Center
NEXRAD	Next Generation Weather Radar
NDB	Nondirectional Beacon
NWS	National Weather Service

O

OATS	Office Automation and Technology Services
ODALS	Omni-directional Approach Lighting System
ODAPS	Oceanic Display and Planning System
OFDPS	Offshore Flight Data Processing System
OJT	On-the-Job Training
OPM	Office of Personnel Management

OPS	Operational Position Standards
OSHA	Occupational Safety and Health Adminstration

P

PAMRI	Peripheral Adaptor Module Replacement Item
PAPI	Precision Approach Path Indicator
PDS	Proficiency Development Specialist
PR	Procurement Request
PSF	Program Support Facility
PSN	Packet Switching Network
PVD	Plain View Display

Q

QATS	Quality Assurance/Training Specialists for Air Traffic

R

RCE	Radio Control Equipment
RCL	Radio Communication Link
REIL	Runway-End Identification Lights
RFP	Request For Proposal
RML	Radar Microwave Link
RMMS	Remote Maintenance Monitoring System
RMUX	Radar Multiplexor
RTC	Radar Training Centers
RTF	Radar Training Facility
RVR	Runway Visual Range
RWP	Real-Time Weather Processor

S

SAFE	Safety Analysis Functional Evaluation
SFO	Sector Field Office
SEIC	System Engineering and Integration Contractor
SOW	Statement of Work
SSM	Solid State Memory
SSR	Solid State Receiver
STP	Subsystem Training Plan

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APPENDIX B

SUBSYSTEM TRAINING PLANS (STPs)

Subsystem Training Plans (STPs)

Subsystem Training Plans for all NAS Plan programs form a major part of this NAS Training Plan and serve as the source of the project data in the Training Data Base. Each STP provides a plan for developing technical training for individual programs. See Chapter 5 for further information about the contents of the STP sections.

STPs are reviewed and updated to reflect new equipment training requirements that must be fulfilled during the current fiscal year, plus two years. See Figure C-6 and the accompanying text in Appendix C for discussion and illustration.

New or revised STPs are distributed directly to Regional offices in accordance with each Region's established requirements. Appropriate FAA Headquarters distribution is also made. All new or revised STPs undergo a thorough review and edit cycle prior to release. Review comments are requested from the following offices: ASM-210, AAT-14, AHT-400, AHT-500, AAC-910, AAC-930, AAC-940, the FAA Program Manager, and the SEIC Program Manager.

The following pages contain an index, arranged by Brown Book Number, of all STPs which have been published. The date that each STP was originally completed and the date and revision number of the most current STP version are included.

NAS PLAN PROGRAM #	PROJECT NAME	COMPLETION DATE	REVISION # AND DATE
1-02	FDIO (ARTCC)	08/30/85	3 03/12/86
1-02	FDIO (ATCT)	08/30/85	3 03/12/86
1-03	DARC ENHANCEMENTS (I)	08/30/85	0 / /
1-03	DARC ENHANCEMENTS (II)	01/31/86	0 / /
1-04	EARTS ENHANCE (MOSAIC)	07/31/85	0 / /
1-04	EARTS MOSAIC (MSAW/CA)	07/31/85	1 04/30/87
1-05	ODAPS	08/31/85	1 11/10/86
1-06	TMS UPGRADE (PHASE II)	07/31/85	1 05/01/87
1-07	HOST	11/27/85	0 / /
1-08	EN ROUTE METERING	02/28/86	0 / /
1-09	CRA	01/31/86	0 / /
1-10	MODE C	01/31/86	0 / /
1-11	VSCS	07/12/85	8 03/01/89
1-16	OFDPS	02/28/86	1 04/30/87
2-01	ARTS-III (ETCA)	01/31/87	1 05/01/87
2-03	ETG DISPLAY (ARTS III)	01/31/86	0 / /
2-06	ARTS IIA ENHANCEMENTS	09/30/85	2 07/21/88
2-07	ARTS II DISPLAY	11/30/85	0 / /
2-11	MULTI CHANN VOICE RECRD	10/31/86	2 02/15/88
2-11	REPLACE REC (400 CHAN)	10/31/86	0 / /
2-16	BRITE DISPLAYS/TML	08/30/85	5 08/29/89
2-18	SUSTAIN N.Y. TRACON (I)	12/12/86	2 08/31/88
2-18	SUSTAIN N.Y. TRACON (II)	08/31/89	0 / /
3-01	FSAS (MODEL #2)	05/09/86	1 11/10/86
3-02	CWP	07/25/88	3 01/30/89
3-03	CONSOLIDATED NOTAM	03/31/86	0 / /
3-04	WMSCR	09/18/85	4 01/11/89
3-05	WCP/DLP	06/30/86	3 01/05/89
3-07	EFAS	04/28/86	1 11/10/86
3-08	HIWAS/ATIS, SCDR for	11/01/87	2 09/14/89
3-09	ADAS	08/31/89	0 / /
3-09	AWOS (AMEX CONTRACT)	02/07/86	0 / /
3-09	AWOS (COMPETITIVE)	04/24/86	0 / /
3-09	AWOS (COMMERCIAL)	05/21/88	0 / /
3-10	RRWDS	11/08/85	0 / /
3-11	GOES RECORDERS	11/08/85	0 / /
3-12	LLWAS	08/30/85	0 / /
3-13	ICSS (TYPE I)	10/15/85	4 03/29/80
3-13	ICSS (TYPE II)	10/15/85	4 03/29/89
3-13	ICSS (TYPE III)	10/15/85	4 03/29/89
4-03	DOPPLER VOR	12/19/86	1 05/01/87
4-03	VORTAC (2ND GENERATION)	06/30/86	1 11/10/86
4-04	NDB	11/19/85	3 05/04/87
4-05	GPS MONITORS	09/15/87	0 / /
4-06	ARMS (ILS)	01/31/86	1 09/15/87
4-07	MLS (1ST BUY)	11/30/85	1 08/24/87
4-07	MLS (2ND BUY)	04/25/86	1 10/13/86
4-08	RVR NEW GENERATION	11/30/85	2 03/31/89
4-09	VISUAL NAVAIDS (PAPI)	01/31/86	0 / /

NAS PLAN PROGRAM #	PROJECT NAME	COMPLETION DATE	REVISION # AND DATE
4-09	VISUAL NAVAIDS (REIL)	12/20/85	0 / /
4-09	VISUAL NAVAIDS (RRCS)	02/23/86	0 / /
4-09	VISUAL NAVAIDS (MALSR)	01/31/86	1 04/25/86
4-09	VISUAL NAVAIDS (MALSR/85)	12/23/88	0 / /
4-09	VISUAL NAVAIDS (PAPI/86)	12/08/88	0 / /
4-09	VISUAL NAVAIDS (REIL/87-88)	07/29/88	0 / /
4-10	APP LIGHT SYS (ALSF-2)	03/30/86	0 / /
4-11	DF MODERNIZATION	11/20/85	1 01/16/89
4-12	MODE S/DATA LINK	11/05/85	1 11/10/86
4-13	ASR-9	01/31/86	2 02/27/86
4-13	LEAPFROG - ASR-7	09/30/86	1 05/01/87
4-13	LEAPFROG - ASR-8	07/31/86	1 11/10/86
4-14	ASDE-3	07/31/85	1 05/01/87
4-15	LONG RANGE RADAR (FARR)	12/02/85	0 / /
4-15	LONG RANGE RADAR (TUBE)	12/16/85	1 04/13/87
4-16	NEXRAD	07/31/86	1 11/10/86
4-17	LORAN-C	03/31/86	1 09/15/87
4-18	TERMINAL DOPL RDR	11/12/86	1 05/21/88
5-02	DATA MULTIPLEXING	02/20/86	4 05/13/88
5-03	RML SYSTEM (RCL)	07/12/85	5 12/04/87
5-05	AIRPORT TELECOMM	09/30/86	1 05/01/87
5-07	NADIN II	02/20/86	3 10/17/86
5-08	RCE	03/31/86	2 12/09/88
5-09	M28 TTY-R	07/31/85	0 / /
6-01	MDT	03/16/88	0 / /
6-01	MDT-2ND INTERIM PROCUREMENT	08/15/89	0 / /
6-01	MPS (TANDEM TXP) AUGMENT	11/06/86	1 07/20/88
6-01	RMMS (CORE)	05/29/86	1 03/30/87
6-02	CBI	09/30/86	1 05/01/87
6-04	MCCP/MMC	03/31/87	1 09/15/87
6-07	POWER SYSTEMS	04/25/86	0 / /
6-14	NAT RADIO COMM SYSTEM	02/20/86	1 10/01/87
6-16	GENERAL SUPPORT (CAEG)	01/31/86	1 09/15/87
N/A	AWIS	03/10/87	1 06/10/88

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APPENDIX C

GUIDE TO THE TRAINING INFORMATION PROCESS

GUIDE TO THE TRAINING INFORMATION PROCESS

The purpose of this appendix is to advise specific FAA offices about data they can use to plan National Airspace System training resources effectively.

The training data in each Subsystem Training Plan is obtained from different FAA organizations, analyzed and expanded to produce various outputs, and then compiled into one document. Having pertinent data in one document facilitates information dissemination and permits transfer of the information to the NAS Training Data Base. The TDB consists of two files: one file contains summary information for each program; the second file contains projected class schedules.

From a training planning perspective, each FAA organization needs varying degrees of detailed data. Organizations that use this information range from the FAA Headquarters to the training elements within each facility. The type of data, the recommended usage, and the organizations affected are described in Sections 1 through 4. Section 5 discusses support specific to the annual Call for Training, as it relates to both current and long-term resource planning.

1 HEADQUARTERS

Four key FAA Headquarters organizations are directly involved in the training process. These four organizations are the primary users of the data in the STPs and the TDB. Figure C-1, Recommended Training Data for FAA Headquarters, summarizes the components which can be used by personnel at the Airway Facilities Training Program Division (AHT-400), the Air Traffic Training Requirements and Certification Branch (AAT-14), the Airway Facilities Workforce Requirements Program (ASM-210), and the Project Management Offices. The stage of implementation for each NAS Plan Project directly affects how useful the STP and TDB data will be to a particular FAA Headquarters organization. The organizations and the data each can use are discussed in the following sections.

1.1 Airway Facilities Training Program Division (AHT-400)

AHT-400 is the focal point for new equipment training management within the Office of Training and Higher Education.

	AHT-400	AAT-14	ASM-210	Proj Mgmt
1. Subsystem Training Plan				
A. System Description	X	X	X	X
B. Contract Information	X			X
C. Training Assumptions	X	X	X	X
D. Training Requirements	X			
E. Training Program Analysis	X	X	X	X
F. Training Schedules				
(1) Equipment Delivery Sites List				
(2) Training Dev Schedule	X			
2. Training Data Base				
A. Data Base III Plus Reports				
(1) Project Class Schedules	X	X*	X*	
(2) Training Data Base Sheets	X	X	X	

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* Course Names/Numbers, Class Numbers, Class Start/End Dates, Number of Students/Site/Training Location

Figure C-1, Recommended Training Data for FAA Headquarters

In an ideal situation, the STP and TDB data will be developed and delivered to AHT-400 along with the AAT-14/ASM-210 training proposal. AHT-400 personnel will then have a substantial amount of data to use when evaluating the strategy for technical training procurement. If training procurement for a project is already underway, the STP and TDB information can still be useful for post-procurement issues. Use of the STPs and Training Data Base is described in the following sections.

1.1.1 STP Component Usage

The following subsections explain how the AHT-400 staff can use specific parts of the STP, such as the System Description, Contract Information, Training Assumptions, Training Requirements, the Training Program Analysis, and the Project Training Development Schedule.

1.1.1.1 System Description

The system description provides information about equipment and software characteristics, and operational functions.

1.1.1.2 Contract Information

A summary of contract information is provided for review by the user.

1.1.1.3 Training Assumptions

Assumptions provide a most-likely scenario for issues analysis when the system description and contract information do not exist or are uncertain.

1.1.1.4 Training Requirements

Course descriptions in this section can be used by AHT-400 and the Air Traffic Training Program Division (AHT-500) to evaluate whether to procure training from a contractor or to task the FAA Academy with course development. These descriptions also help writers of training procurement requests to ensure that the appropriate level of training is being procured.

Total numbers of personnel to be trained within this section provide the best available data about the total initial cadre training requirement, as defined by FAA Headquarters. For Airway Facilities, the numbers represent the minimum number of trained personnel that can adequately field the system; they may not

reflect the total number of personnel that ultimately need training. For Air Traffic, the numbers represent the total training requirement, since all personnel normally need to be trained prior to the new systems being declared operational. This information can be used in evaluating whether to procure training or how much training to procure.

1.1.1.5 Training Program Analysis

This section of the STP contains issues raised during analysis of the project. These issues are the most important data within the STP for AHT-400 and AHT-500 use. Issues can help planners to determine whether to procure training from a contractor or to modify an existing training contract. These issues also provide data on a number of topics, including whether there is sufficient time to procure training, whether training can be delivered and completed prior to system delivery, and recommendations of specific training strategies. This type of data can also be used to plan training during the annual Call for Training process.

1.1.1.6 Project Training Development Schedule

This schedule provides projected milestones for key training development activities for a particular project. This information can be used as a guideline for developing contract deliverable dates prior to contract award, as well as for refining the deliverable dates during any post-contract award meetings.

1.1.2 Training Data Base Component Usage

The following subsections explain how AHT-400 personnel can use the Project Class Schedules and the TDB Summary Sheets.

1.1.2.1 Project Class Schedules

Class schedules are maintained in the automated TDB and are provided FOR PLANNING PURPOSES ONLY.

These schedules indicate the number of personnel to be trained and projected class dates and provide insight into the overall scope of the total training requirement necessary to field the system. The schedules reflect the best estimate of when training, to implement the new system, should occur. This data can be used to justify training procurement or FAA Academy workload decisions. When viewed with respect to the annual Call for Training, AHT-400 can use the schedules to validate the quota input from the field for various courses.

1.1.2.2 Training Data Base Summary Sheets

These sheets summarize data from the STP and TDB and are updated as projected information changes. They also provide unique information. For example, the first site delivery dates, projected contract award dates, and critical design review dates can be used to determine when training needs to be developed, when it needs to be conducted, and when the training proposal and procurement requests need to be generated. These data are essential during the annual Call for Training process, since they define the necessary timeframes for developing and conducting training.

1.2 Air Traffic Training Requirements and Certification Branch (AAT-14) and Airway Facilities Workforce Requirements Program (ASM-210)

The value of the STP/TDB data depends directly on the stage of implementation for the project under review.

1.2.1 STP Component Usage

The following subsections explain how personnel in AAT-14 and ASM-210 can use specific parts of the STP, such as the System Description, Training Assumptions, and the Training Program Analysis.

1.2.1.1 System Description

The system description provides information about equipment and software characteristics and operational functions.

1.2.1.2 Training Assumptions

Assumptions provide a most-likely scenario to form the basis for issues analysis when system description and contract information do not exist or are uncertain.

1.2.1.3 Training Program Analysis

This section is the most useful for determining overall impact on a particular project. Issues resulting from the training analysis can lead to a modification of an existing contract, the initiation of a training contract, or a decision to task the FAA Academy to develop training. These training issues can also alert the FAA to potential slippage in program or training development that might adversely affect the training strategy or planning during

the annual Call For Training. Finally, training issues can be useful as points for discussion and evaluation during post-contract award conferences with respect to contractor deliverables and milestones.

1.2.2 Training Data Base Component Usage

The following subsections explain how personnel in AAT-14 and ASM-210 can use the Project Class Schedules and the Training Data Base Summary Sheets.

1.2.2.1 Project Class Schedules

Class schedules are maintained in the automated TDB and are provided FOR PLANNING PURPOSES ONLY.

Although the class schedules continually change to reflect the most up-to-date estimate of projected training, they are nonetheless useful at the Headquarters level in determining the overall size of the training requirement at a national, Regional, or site level. AAT-14 and ASM-210 know the total number of personnel to be trained for each project; however, the class schedules more clearly define how many personnel require training and from which sites those personnel must come. This information is helpful in estimating the number of personnel to be trained as it applies to the annual Call for Training, and for current and long-term planning of training resources.

1.2.2.2 Training Data Base Summary Sheets

Information on the sheets is most useful when it can be made available to the user prior to training proposal development. First site delivery dates, projected contract award dates, and critical design review dates can be used to determine when training needs to be developed, when it needs to be conducted, and when the training proposal and procurement requests need to be generated. These data are essential during the annual Call for Training process, since they define the necessary timeframe for developing and conducting training.

1.3 Project Management Offices

The FAA Project Management Offices are responsible for ensuring that previously identified training requirements are met. The data in the STPs and TDB can be used more effectively if available during the early stages of a particular project, so that the training requirements and issues are clearly defined before

contract award. After contract award, the data is useful identifying gaps or redundancies in the training program.

1.3.1 STP Component Usage

The following subsections explain how personnel in the Project Management Offices can use specific parts of the STP, such as the System Description, Contract Information, Training Assumptions and the Training Program Analysis.

1.3.1.1 System Description

The system description provides information about equipment and software characteristics and operational functions.

1.3.1.2 Contract Information

A summary of contract information is provided for review by the user.

1.3.1.3 Training Assumptions

Assumptions provide a most-likely scenario to form the basis for issues analysis when the system description and contract information do not exist or are uncertain.

1.3.1.4 Training Program Analysis

Issues resulting from the training analysis are the most important aspect of the STP for project managers. The description of these issues provides information about whether training can be accomplished prior to scheduled Initial Operating Capability (IOC) of the system. If not, project managers may pursue alternative strategies or, as a last resort, delay system delivery until the issue is resolved in a satisfactory manner. Analysis of these issues is, therefore, an important factor when planning overall training. For example, if project management delays system implementation, training already planned and budgeted for in the annual Call For Training might be adversely impacted.

2 FAA ACADEMY

The FAA Academy uses the planning information in the STPs and the TDB to assist in projecting resource requirements (for instructors, facilities, equipment, and supplies) to support

future student loading. The plans provide a more extensive treatment of topics covered in the training proposal, which is useful when the STP is available to the FAA Academy prior to or at the same time as the training proposal. These plans are updated to coincide with the annual Call for Training and for long-range planning.

2.1 SEIC Training Representative Interface

Using selected information from both the STPs and the TDB, the SEIC Training Representative at the FAA Academy can create specialized reports that index training data by project and by quarter. These reports are then used to identify resource requirements to meet future training needs.

The usefulness of most STP and TDB information depends on when it is available in the training cycle. When data arrives early in the training procurement process, it can support advanced planning. When data arrives later in the process, it can support project verification, monitoring, and possible update. Data available near the end of the cycle is useful for documentation and evaluation. The use of the TIP components is summarized in Figure C-2, Recommended Training Data for the FAA Academy.

2.1.1 STP Component Usage

The following subsections explain how the SEIC Training Representative at the FAA Academy can use parts of the STP, such as the System Description, Contract Information, Training Assumptions, the Training Program Analysis and, the Project Training Development Schedule.

2.1.1.1 System Description

This section gives the SEIC representative basic information about the design and operation of each new system and where it fits into the overall NAS.

2.1.1.2 Contract Information

This section provides information on new training products to be developed by the system contractor. It also contains a schedule for their delivery. This information allows the SEIC Training Representative to coordinate planning with the Training COTR and FAA Academy management to assure the development of quality training and the smooth transition from contractor-provided to FAA Academy-provided instruction.

1. Subsystem Training Plan	SEI	AT/AF	COTR	Academy Mgmt
A. System Description	X	X	X	
B. Contract Information	X		X	
C. Training Assumptions	X	X	X	
D. Training Requirements	X	X	X	
E. Training Program Analysis	X	X	X	
F. Training Schedules				
(1) Equipment Delivery Sites List				
(2) Training Dev Schedule	X	X	X	X

2. Training Data Base				
A. Data Base III Plus Reports				
(1) Project Class Schedules	X*	X*	X*	X*
(2) Training Data Base Sheets	X	X	X	X

* Course Names/Numbers, Class Numbers, Class Start/End Dates, Number of Students/Site/Training Location

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Figure C-2, Recommended Training Data for the FAA Academy

2.1.1.3 Training Assumptions

Assumptions provide a most-likely scenario for issues analysis when the system description and contract information do not exist or are uncertain.

2.1.1.4 Training Requirements

These requirements expand basic information in the training proposal and suggest the scope of required FAA Academy resources to support the program.

2.1.1.5 Training Program Analysis

This section addresses any problems, exceptions, risks, and areas of special concern that may impact FAA Academy training development or implementation. It also provides advanced notification for planning purposes.

2.1.1.6 Project Training Development Schedule

This calendar of critical events can be used to project and monitor training and training development activities for FAA Academy schedules and resources.

2.1.2 Training Data Base Component Usage

The following subsections explain how the SEIC Training Representative at the FAA Academy can use Project Class Schedules and the Training Data Base Summary Sheets.

2.1.2.1 Project Class Schedules

The class schedule reports can be used to plan, monitor, and update major training events. The SEIC Training Representative can tailor these reports to support instructor workload planning for AT/AF managers, resource utilization for facility managers, and schedule change impacts for Training COTRs.

2.1.2.2 Training Data Base Summary Sheets

The sheets summarize much of the data from the STP and TDB, but also provide some unique information. The total number of AF and AT Students provides the FAA Academy with a good idea of the scope of required training. These sheets also project the dates that the FAA Academy will assume training for a project, and also

provide the dates the equipment will be delivered to the FAA Academy.

2.2 Air Traffic and Airway Facilities Managers

The SEIC Training Representative will provide the managers from both AT and AF with information from the STPs and TDB. The STP is a paper document available for detailed planning, while the TDB is a dynamic data base that can be customized to produce reports tailored to FAA Academy needs.

2.2.1 STP Component Usage

The following subsections explain how AT and AF managers at the FAA Academy can use parts of the STP, such as the System Description, Training Assumptions, Training Requirements, the Training Program Analysis, and the Project Training Development Schedule.

2.2.1.1 System Description

This section gives AT and AF managers a basic knowledge of the equipment, so they can begin planning where the equipment will be located at the FAA Academy, who might develop or instruct courses, and what old systems the new systems may replace.

2.2.1.2 Training Assumptions

This information allows training managers to begin designing an overall strategy for developing and delivering a course to meet the system's training requirements, especially in the early stages of acquisition when key documentation (system descriptions, specifications, and contract information) are still being developed.

2.2.1.3 Training Requirements

This section, which expands and enriches the information provided in the training proposals developed by AAT-14 and ASM-210, allows the FAA Academy to develop a better estimate of the work required to develop courseware for the new system.

2.2.1.4 Training Program Analysis

Because this section highlights the areas of risk for the training program, it allows managers to focus resources on weak areas, and

to plan FAA Academy training support with a knowledge of constraints and issues.

2.2.1.5 Project Training Development Schedule

This section summarizes the major deliveries in the training development and delivery cycle. It provides a means for FAA Academy and Headquarters personnel to verify delivery schedules for documents and services.

2.2.2 Training Data Base Component Usage

The following subsections explain how AT and AF managers at the FAA Academy can use Project Class Schedules and the Training Data Base Summary Sheets.

2.2.2.1 Project Class Schedules

Class schedules allow managers to begin advanced planning of instructor staffing and scheduling. They are provided in the TDB FOR PLANNING PURPOSES ONLY. The SEIC Training Representative can tailor the class schedule data base to incorporate the AT and AF training manager's modifications to the generic class schedules provided in the STP. This facilitates workload planning.

2.2.2.2 Training Data Base Summary Sheets

These sheets provide managers with planning data not found in other sections of the STPs and TDB. They provide the dates when equipment will be delivered and training will be assumed by the FAA Academy. Plans for theory and performance examinations should also be verified to assure that Headquarters and FAA Academy decisions coincide.

2.3 Contracting Officer's Technical Representative (COTR)

Because Training COTRs must monitor the work of contractors who are often geographically distant, they are constantly seeking information on contractor plans and performance. The STP and TDB can provide some of this information.

2.3.1 STP Component Usage

The following subsections explain how Training COTRs can use parts of the STP, such as the System Description, Contract Information,

Training Assumptions, Training Requirements, the Training Program Analysis, and the Project Training Development Schedule.

2.3.1.1 System Description

This section gives the Training COTR a description of the design and operation of each new system and where it fits into the overall NAS.

2.3.1.2 Contract Information

This provides Training COTRs with advanced planning data on major elements of the contract they will evaluate and track, including dates for contract awards, Preliminary Design Review, Critical Design Reviews, and contract deliverables.

2.3.1.3 Training Assumptions

This information allows Training COTRs to begin designing an overall strategy for developing and delivering a course to meet the system's training requirements, especially in the early stages of acquisition when key documentation, such as system description and contract information, does not yet exist.

2.3.1.4 Training Requirements

This section provides the Training COTR with additional training planning information, such as the number of trainees, prerequisite courses, course numbers and titles, and course objectives.

2.3.1.5 Training Program Analysis

This section helps the Training COTR to spot potential problem areas, including at-risk deliverables or deadlines.

2.3.1.6 Project Training Development Schedule

This section summarizes all major contract activities, deliverables and deadlines, facilitating the tracking of each project for which the Training COTR is responsible. Training COTRs can overlay projects under their cognizance to help them anticipate workloads.

2.3.2 Training Data Base Component Usage

The following subsections explain how the Training COTR can use Project Class Schedules and the Training Data Base Summary Sheets.

2.3.2.1 Project Class Schedules

Class schedules allow Training COTRs to begin advanced planning of instructor staffing and scheduling. They are provided in the TDB FOR PLANNING PURPOSES ONLY.

The class schedules can also be used by Training COTRs to assess the impact of program changes, such as contractor schedule slips.

2.3.2.2 Training Data Base Summary Sheets

These sheets provide a one-page summary of the data available from the STP and TDB. They also contain a number of unique information fields Training COTRs can use this information to monitor the number of contractor courses, the location of contractor classroom training, and the location of contractor hands-on training.

2.4 FAA Academy Facility Management

The STPs and TDB provide the facility managers with useful planning information, such as dates of equipment delivery to the FAA Academy and classroom space requirements. This information is available from the SEIC training representative.

2.4.1 STP Component Usage

The Project Training Development Schedule, a calendar of significant project events, helps the facility managers to plan and schedule use of their facilities based on the arrival of equipment, the training start and end dates, and any FAA Academy instructor training dates.

2.4.2 Training Data Base Component Usage

The following subsections explain how the facility managers at the FAA Academy can use Project Class Schedules and the Training Data Base Summary Sheets.

2.4.2.1 Project Class Schedules

These tailored class schedule reports can be adapted to the needs of facility managers to allow them to plan classroom and laboratory space, using updated data from the SEIC training representative. This can be done in coordination with the AT and AF training managers.

These schedules allow the facility manager to plan for specific numbers of students on specific dates, focusing on peaks and valleys of student loading. Class schedules are provided in the TDB FOR PLANNING PURPOSES ONLY.

2.4.2.2 Training Data Base Summary Sheets

These sheets include useful facility planning data, including equipment delivery, the date training begins at the FAA Academy, and an estimate of the number of students to expect.

3 FAA TECHNICAL CENTER

Personnel at the FAA Technical Center can use the planning information in the STPs and the TDB to assess initial training quota requirements for NAS plan programs which undergo integration and testing there. The use of the STPs and the TDB is summarized in Figure C-3, Recommended Training Data for the FAA Technical Center.

3.1 STP Component Usage

SEIC personnel at the FAATC use the STPs and the TDB to provide training planning data to various FAATC organizations. All FAATC organizations (ASM-160, ATR-240/250, ACN-100/200 and ACN-300) use the same STP and TDB elements, as described in the following subsections.

3.1.1 System Description

The system description provides those involved with initial testing at the FAATC with an early reference for system hardware and software characteristics. Those who are responsible for system maintenance after testing can use the system description to determine resource requirements.

	ASM-160	ATR-240/250	ACN-300	ACN-100/200
1. Subsystem Training Plan				
A. System Description	X	X	X	X
B. Contract Information	X	X	X	X
C. Training Assumptions	X	X	X	X
D. Training Requirements	X	X	X	X
E. Training Program Analysis				
F. Training Schedules				
(1) Equipment Delivery Sites List				
(2) Training Dev Schedule	X	X	X	X
2. Training Data Base				
A. Data Base III Plus Reports				
(1) Project Class Schedules	X*	X*	X*	X*
(2) Training Data Base Sheets	X*	X*	X*	X*

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*Provided as needed by SEI representative

Figure C-3, Recommended Training Data for the FAA Technical Center

3.1.2 Contract Information

This section provides all organizations with information about training products to be supplied by system contractors. It is useful in determining whether the contract will address unique FAATC requirements or if other resources will be required.

3.1.3 Training Assumptions

In the absence of firm contract information, the training assumptions provide a most-likely scenario for issues analysis. The assumptions also provide a basis for planning when actual data is uncertain or does not exist.

3.1.4 Training Requirements

This section describes the training being developed to support the system. It provides a basis for determining whether the courses will enable FAATC personnel to carry out their respective testing, software maintenance, hardware configuration, and equipment maintenance responsibilities. Since this section also describes the approved maintenance concept, it is especially useful to personnel responsible for maintaining FAATC systems after initial equipment testing.

Training requirements establish the prerequisites for attending the courses, allowing FAATC managers to send their personnel to acquire prerequisite training prior to attending subsequent training classes.

Since the course objectives in this section give managers an overview of the type of training personnel will receive, the information can be used to plan for appropriate personnel management.

When available, course names and course numbers are provided for use in the annual Call for Training.

The Training Requirements section contains data on AF and AT hardware and software. All FAATC organizations (whether involved in initial test, configuration management, life-cycle software maintenance, or equipment maintenance) can use this information to determine the scope of their future training requirements.

3.1.5 Project Training Development Schedule

These schedules are useful for tracking the progress of training development. FAATC organizations can request up-to-date information about the status of subsystem training elements; the

SEIC personnel can track the elements and provide information by utilizing these schedules.

3.2 Training Data Base Component Usage

The following subsections explain how FAATC personnel can use the Project Class Schedules and Training Data Base Summary Sheets.

3.2.1 Project Class Schedules

Class schedules are available to FAATC managers from the SEIC Training Representative. The schedules provide information on planned training dates and locations for FAATC personnel, including course length, course numbers and number of personnel to be trained per organization. It is useful planning information because it enables managers to project personnel training requirements. Remember, however, that class schedule projections are provided FOR PLANNING PURPOSES ONLY.

3.2.2 Training Data Base Summary Sheets

The data in these sheets provides a high-level synopsis of training development information. FAATC managers can extract information on: whether a system will be delivered to the FAATC; where and when systems will undergo initial testing; how long the test period will be; and, a general idea of the scope of training. This information is useful when planning FAATC requirements.

The data in the data base file can be arranged by the SEIC personnel and delivered in hardcopy format to FAATC organizations to enhance management requirements analyses.

4 REGIONS

Regional personnel can use the planning information in the STPs and the TDB to assess initial quota requirements for attrition, recurrent, and new hire training needs (referred to as "other training" in the following paragraphs) and staffing requirements for maintaining safe, efficient operations. Based on those assessments, Regional FAA training managers (supported by the Regional SEIC Training Representative) determine optimum quota assignments for initial and other training during the annual Call for Training process. Figure C-4, Recommended Training Data for the Regions, summarizes the elements recommended for Regional applications.

	Region SEI	HRDO-XXX-17	AT-XXX-500	AF-XXX-400
1. Subsystem Training Plan				
A. System Description	X	X	X	X
B. Contract Information				
C. Training Assumptions	X	X	X	X
D. Training Requirements	X	X	X	X
E. Training Program Analysis	X	X	X	X
F. Attachments				
(1) Equipment Delivery Sites List	X	X	X	X
(2) Training Dev Schedule				
2. Training Data Base				
A. Data Base III Plus Reports				
(1) Project Class Schedules	X*	X*	X*	X*
(2) Training Data Base Sheets	X	X	X	X

* Course Names/Numbers, Class Numbers, Class Start/End Dates, Number of Students/Site/Training Location

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Figure C-4, Recommended Training Data for the Regions

4.1 STPs

The following subsections describe how Regional training personnel can use various parts of the STP.

4.1.1 System Description

The system description provides information about equipment and software characteristics and operational functions.

4.1.2 Training Assumptions

The assumptions provide a basis for developing the initial STPs in the absence of confirmed fact. As assumptions made early in project development are finalized, the SEIC Training Representative provides revised STPs containing current information.

4.1.3 Training Requirements

This section of the STP describes the courses being planned for a particular subsystem. It also includes course objectives and outcomes, prerequisites, the maintenance concept, and the total number of personnel to be trained. These items provide managers with a basis for identifying personnel to fill training quotas. Managers can minimize shortages of qualified personnel by sending staff to prerequisite courses before NAS Plan subsystem training classes are scheduled or by evaluating other sources of qualified personnel. Managers can also use the Training Requirements section to identify and track other training needs that will occur as a result of NAS Plan projects.

4.1.4 Training Program Analysis

This section is the most useful for determining overall impact on a particular project. Issues resulting from the training analysis can lead to modification of an existing contract, the initiation of a new training contract, or a decision to task the FAA Academy to develop training. These training issues can also alert the FAA to potential slippage in program or training development that might adversely affect either the planned training strategy or planning during the annual Call For Training.

4.1.5 Equipment Delivery Sites List

This section lists locations that will receive the equipment. Regional users can determine where a given piece of equipment will

be installed and then decide whether staff at those locations need training.

4.2 The Region-Specific Training Data Base

The Regional SEIC Training Representative can develop and maintain a Region-Specific Training Data Base for the Regional Human Resource Development Officer (HRDO, XXX-17), the Regional Airway Facilities training manager (XXX-400), and the Regional Air Traffic training manager (XXX-500). This Region-Specific TDB would be composed of selected information from the STPs and the TDB. In addition, the Region-Specific TDB would contain current and long-term other training requirements to be addressed during the Call for Training process.

4.2.1 Region-Specific Training Data Base Management

In compiling the Region-Specific TDB, the SEIC Training Representative is constrained in what can be done with information and specifications generated by FAA Headquarters. Such information cannot be changed by the Regional SEIC representative. For example, the total project training quota assigned to a Region (i.e., the Category 1E number required to commission and field the system) cannot be increased arbitrarily by either the SEIC Regional representative or by the FAA Regional training personnel, since this quota is provided by FAA Headquarters. Also, projected class dates shown in the TDB cannot be changed, since they are derived from the system procurement and must conform to the entire delivery schedule. However, rearrangement of quota assignments within these parameters is encouraged, as is coordination with other Regional training personnel to facilitate the most advantageous planning for all.

4.2.2 Training Data Base Inputs

The following subsections describe how Regional personnel can use specific data in the Training Data Base.

4.2.2.1 Course Names and Numbers

Course names and numbers are given for projected training course identification and controlling projected personnel assignment.

4.2.2.2 Class Numbers

Class numbers are used for tracking projected personnel assignments.

4.2.2.3 Class Start and End Dates

Planners use these dates to assess which projected classes support the Region's training requirements for system deliveries. Managers also consider these dates when planning personnel assignments and scheduling overlap between initial and other training.

4.2.2.4 Number of Students per Site per Class/Length of Course

These numbers are used to plan personnel assignments and to project the amount of time trainees will be away from their assigned duties.

4.2.2.5 Training Location

This information is used to project local training support, travel, and lodging requirements. It allows planners to assess the impact of overlapping, competing and mixed training delivery strategies.

4.2.2.6 Cost Center Codes

These codes are used to determine the duty station of the person who will maintain or operate the system. This information is especially useful when dealing with Airway Facilities training quota issues, because there are occasions when the equipment location and the location of the person who maintains it are different.

4.2.3 Region-Specific Training Data Base Applications

The SEIC Regional Training Representatives provide training requirements, briefings, and printouts of the Region-Specific TDB to their HRDO, AT and AF training counterparts at the FAA Regional Headquarters, and other distribution points specified by Regional guidelines. At the time they deliver the printouts, they explain the training assumptions and course descriptions to their FAA Regional counterparts and assess their relationship to the appropriate system delivery schedule. The Training Representatives also identify any Regional issues that arise during the review.

FAA Regional Headquarters personnel then review the printouts to determine whether the projected class schedules and quota assignments support their training requirements for initial system deliveries at Regional sites. They can also project future personnel assignments by job specialty and site. Finally, they

incorporate the results of their review when planning for other training requirements and return the annotated Region-Specific TDB printouts to their SEIC Regional Training Representative.

At this point, the SEIC Regional Training Representatives update the Region-Specific TDB as required, check the updated Region-Specific TDB against the regular TDB, and coordinate any changes in class assignments. They forward the recommended changes to the Regional Training Coordinator at SEIC Headquarters. Figure C-5, SEIC Regional Training Coordinators, lists names and telephone numbers of personnel who act as the Training Representatives in the Regional and Washington, D.C. SEIC offices.

SEIC REGIONAL TRAINING COORDINATORS

		FEDERAL TELEPHONE SYSTEM (FTS) NUMBER
Alaska	Robert Carter	907-271-5795
Central	Tom Perry	867-6833
Eastern	Mike Ceglia	667-0906
Great Lakes	Bill Baumann	384-7783
New England	John Topitzer	836-7165
Northwest Mountain	Mike Thibodeau	446-2651
Southern	Cecil West	246-7995
Southwest	Bill Sloan	734-5354
Western Pacific	Don Hollum	984-0029
MMAC	Vern Wahl	747-3268
FAA Technical Center	Richard Mendel	482-4283

SEIC TRAINING COORDINATORS (Washington, D.C.)

Alaska	Maryann Kicinski	967-5344
Central	J.J. Furtek	967-5428
Eastern	Lou Wardlow	967-5915
Great Lakes	Carol Neumann	967-5363
New England	Ernest Vaughn	967-5367
Northwest Mountain	Rick Gallaher	967-5345
Southern	Bob Orlosky	967-5426
Southwest	Chuck Stevens	967-5466
Western Pacific	Ken Kropkowski	967-5425
MMAC	Paul Phenicie	967-4849
FAA Technical Center	Al Miller	967-4870

Figure C-5, SEIC Regional Training Coordinators

5 TRAINING DATA DEVELOPMENT

Identification of training requirements must begin as early as possible and be reassessed throughout the acquisition process. A systematic approach to the training program is implemented to provide an orderly transition, while avoiding disruption of training programs currently being developed. This approach will not affect the initial development of STPs for each project. However, it focuses further refinement of STPs on projects where training will be required within the target fiscal year and the interim years, as depicted in Figure C-6, Training Data Development Timelines. This STP/TIP development focus provides the FAA Headquarters and Regional training personnel with the most current meaningful planning information available.

A major area of FAA planning support is directly related to the annual Call for Training . This support is provided through selective use of portions of the TIP. Figure C-6 provides the timelines for activities associated with this support. In the example shown, these activities begin in April 1990 and include class scheduling for FY 92, which in turn, supports the annual Call For Training for FY 92. To support this effort, all STPs and related schedule data are refined and updated between April and September 1990 and then distributed to the FAA Headquarters and SEIC Regional Logistics and Training Representatives. These updates ensure that new equipment training quotas will be as accurate as possible when issued by Headquarters. During October 1990 to March 1991, this data (in the form of TIP updates) will be provided to the Regions for their planning updates and to FAA Headquarters at the FY 92 Programming Conference (to be held in April 1991).

The planning for FY 93 will begin during this same timeframe. The STPs which address the next Call for Training will be completed with draft scheduling information. Then those TIP schedules will be refined and updated in preparation for the November 1991 release of the Call for Training for FY 93, starting the cycle over again.

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Training Data Development Timelines

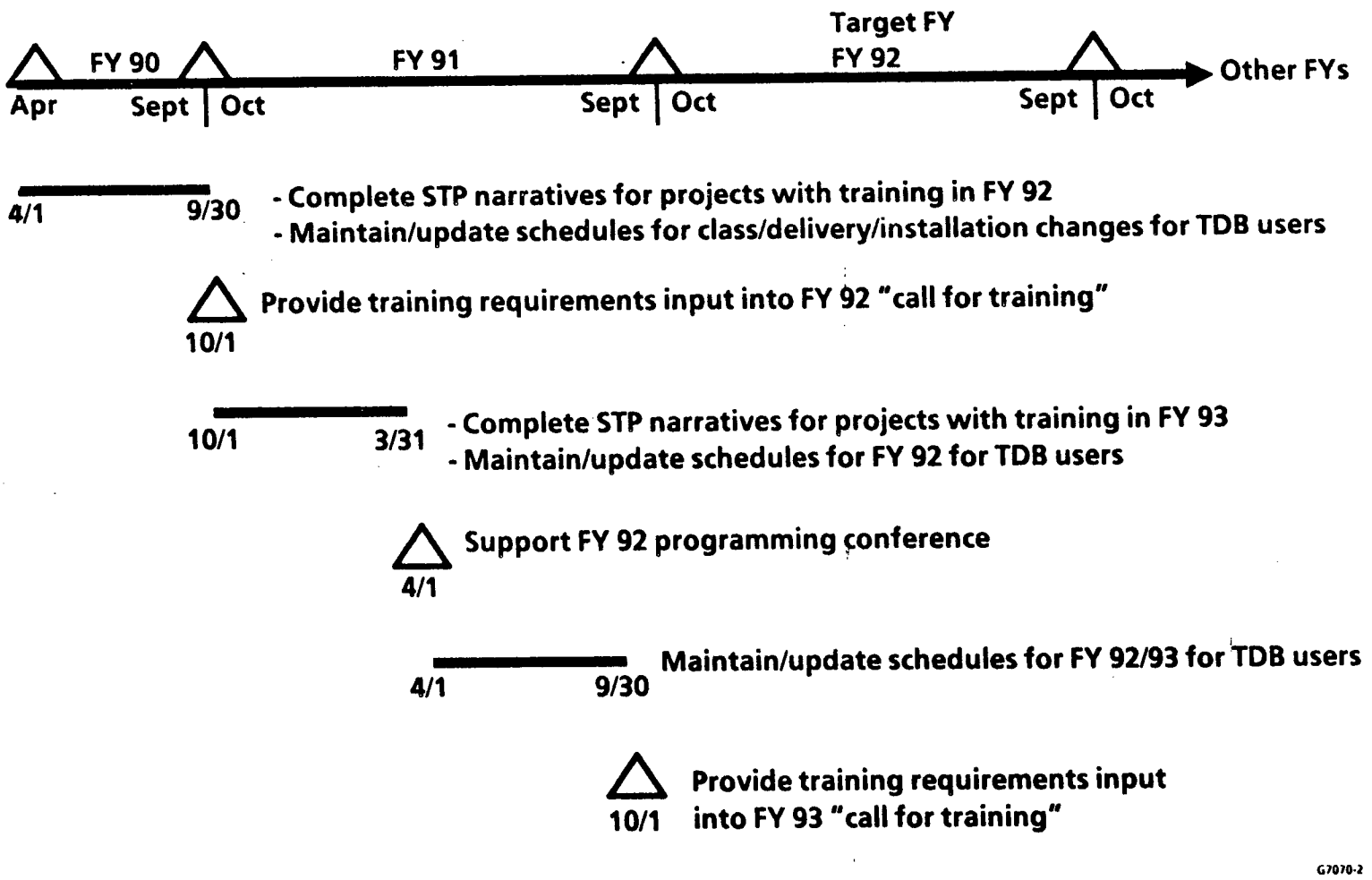

Figure C-6, Training Data Development Timelines